P86-0336.(01) University Archives

university of toronto
computing services

UTCS ComputerNews

ARTICLES

Let's Talk About It: UTCS Rate Reductions 1
User Interface Group 2
Advising Services 2
Advising Support for Instructional Computing 4
Applications Support Group 4
Networking News 5
The Imaging/Humanities Support Group 7
Graphics at UTCS 9
WordPerfect Microcomputer Course 10
The Statistical & Numerical Analysis Computing Group (SNAC) 10
SAS Version 5.15 Available for User Test on MVS 11
GP UNIX News 12
Accounting Services 14
Protect Your Codes 14
Engineering Annex Terminal Site 15
Sidney Smith Terminal Site 15
Scarborough Campus Computer Centre 15
Erindale Campus Computer Centre 16
VMSECURE Replaces DIRMAINT on CMS 17
UTCS MicroVAX II Maintenance 18

DEPARTMENTS

UTCS Noncredit Short Courses 19
Hours of Services 21
Change Committee 22
UTCS Internal Rate Schedule 23
Recent Acquisitions in the Computer Library 31
Technical Reports Received in the Computer Library 32
Documents at UTCS 34
Consulting and Enquiries 36
UTCS Directory 36
Committees on Computing 36
UTCS Terminal and Advising Sites 37
UTCS Services 38
UTCS Software List 39

ISSN 0315-4661 **September 1986** **No. 233**

Publisher

University of Toronto
Computing Services
Toronto, Ontario
Canada M5S 1A1

Editor: M. Parrott

Publications Assistant: E. Weitmann

Publication Date: September 1, 1986

Subscriptions

Subscriptions run for one year, beginning each January. Changes should be entered on the tear-out form at the back of this issue and mailed to *ComputerNews,* Engineering Annex, Room 207 (or phone 416-978-4034).

ComputerNews is published 8 times yearly by the University of Toronto Computing Services. Enquiries should be directed to:

The Editor
ComputerNews
11 King's College Road, Room 207
University of Toronto
Toronto, Ontario
Canada M5S 1A1

Network address: PARROTT at UTORONTO
(NetNorth/BITNET/EARN)

Unless otherwise indicated, network addresses appearing after authors' names pertain to NetNorth/BITNET/EARN.

UNIX is a trademark of AT & T Bell Laboratories.
SAS is a trademark of SAS Institute Inc., Cary, N.C.

Permission is granted to reprint articles from *ComputerNews* for noncommercial purposes provided the author, publication and issue are acknowledged.

Let's Talk About It: UTCS Rate Reductions

[The following article is not subject to editorial review.]

Gentle reader: in the last *ComputerNews* we announced a substantial rate reduction for our UNIX service. We indicated that other rate reductions were in the works for some of our other systems. This is the other shoe dropping. We are going to offer a combination of general rate reductions for our IBM systems and credits for established research and instructional users. In the most favourable case the combination will be equivalent to a new rate which is 40 percent of the old rate.

Changes in the rates will be listed in a table at the end of this article. In summary though, the rates for use of the MVS system will be about 90 percent of the old rates, while the new rates for the use of the VM/CMS system will be 80 percent of the old rates. The rate reductions apply to the use of the machines and not for manuals, tape mounts and rentals, port charges, or printing, or any other services tied directly to incremental or variable costs. The credit arrangement for research and instructional users will be different.

Once a department or user has spent an amount equal to that spent in the last fiscal year on research computing (excluding port or communications charges) at the new rates, a credit of 50 percent of that amount will be awarded for subsequent computing. This credit cannot be applied towards manuals, port charges, or printing. Once the credit is used up, the normal rates will again apply. Any additional paid use will add to the base for the next year's arrangement. At the end of the fiscal year any unused credits will not be carried forward but will be cancelled.

Instructional use will be treated the same as research except that the credit offered will be 100 percent. The same caveats will apply. We will be willing to discuss discounts for identifiable groups with new instructional needs for specific courses.

For more information on details and terms and conditions contact Marg Doherty at 978-8697 or DOHERTY at UTORONTO. To investigate new instructional use contact me at 978-8948. Details of the rate changes follow:

RATE CHANGES

Service	Component	New Rate	Old Rate
MVS	CPU-$/minute	$8.50	$9.50
	IOUSE-$/1000	.30	.35
	Connect-$/hour	1.35	1.50
	Online Storage-$/track/day	.018	.02
	APL storage-$/block		
	workspace	.00156	.00173
	file	.00124	.00138
	APL session charges		
	CPU-$/1000 units	2.00	2.22
	Connect-$/hour	1.35	1.50
VM/CMS	CPU-$/minute	4.75	6.00
	Connect-$/hour	.80	1.00
	Temp disk-$/cyl/hour	.07	.09
	IOUSE-$/1000	.25	.30
	Online storage-$/track/day	.20	.26

Dr. Warren Jackson
WCJ at UTORONTO

User Interface Group

A number of significant changes have occurred within and around the User Interface Group this past summer. The most apparent change is that all members of the Group who were located in McLennan Physical Labs are now located in the Koffler Centre, Room 308. Aside from a new location the move of the groups caused other changes. Judi Parkinson has joined us as receptionist and Micro Lab assistant. Laser printing facilities have been added to the Micro Lab, initially to meet internal printing needs of staff, but soon to be extended to other users. Once connectivity and accounting issues are resolved, we will announce this in-house printing service to the community.

In addition to laser printing we will also be providing typesetting, slide making, and possibly image digitizing as a part of our in-house printing service. To this end we have acquired a Polaroid Palette slide maker and will soon be receiving a Linotronic typesetter. We are also happy to announce that funding was made available for us to upgrade our Education Facility by equipping it with 11 networked microcomputers. The refurbished facility will allow us to offer more courses of greater relevance to our community. We intend to offer SAS/PC courses, and a WordPerfect course is currently in development. The Education Facility may also be booked for University-approved events. When not otherwise committed, the classroom will be available to individual faculty, staff, and graduate students.

We regret that Dr. Willard McCarty has left the Micro Lab but are pleased that he has gone no further than the Centre for Computing in the Humanities. We are currently interviewing candidates to fill the vacant position. We were also fortunate this summer to have Joyce Bernstein join us as a member of the Statistical and Numerical Analysis Computing Group (SNAC). Joyce will be responsible primarily for supporting users of statistical packages, thus allowing SNAC supervisor Dr. William Fehlner to concentrate on providing support to users of the Cray supercomputer. Bill has been preparing for his new duties by attending several courses offered by Cray. In the early fall he will be presenting several seminars on how to use the Cray effectively.

We encourage you to stop by the Koffler Centre to meet new staff members and to reestablish old acquaintances. While you are there, we would be happy to demonstrate new services and facilities.

Don Gibson
DON at UTORONTO

Advising Services

When University researchers and staff have computer problems, they turn to the Central Advising Office. Conveniently reached by phoning 978-HELP, Central Advising can usually solve the problem in a few minutes. Although this is a phone-in service, if necessary you can often transmit your program listing or other information electronically to the screen of the person you are talking to.

The phone lines are answered by UTCS staff. They have all received special training from UTCS, with emphasis put on the products designated as Support Class A. For each of these products, the Advising Office tries to ensure that there is always someone present who can solve the more common problems that can be dealt with in less than five minutes. For some complex problems,

continued...

Advising Services continued

or for problems with any products designated Class B or C, the Advising Office can draw on the support of other groups within UTCS. For your convenience, a list of products with their support classes appears at the back of every *ComputerNews* issue.

The vast majority of problems can be solved quickly over the phone, but there are still many that can't. For these, an appointment with a Consultant or a Product Specialist must be arranged. For example, users with general questions about the services offered by UTCS usually prefer to sit down with a Consultant, who can discuss alternatives and requirements. Those who are just beginning to use a new service and don't know how to start can also profit from such an appointment. Other times, the service or product being used, or some aspect of it, is better dealt with by a Product Specialist. Even if the product is known to the person who answers the phone, the problem may be too complex to solve in five minutes. As well, some problems just can't be communicated over a phone.

If you or the UTCS staff person decide that your query cannot be handled over the phone, then an appointment can be set up for you. The Consultants, Roni Moravan and Jon Alexander, work in the Central Advising Office. They are involved in testing products and reviewing documentation, as well as answering users' questions. Appointments with Roni and Jon can generally be made for the next business day, but this depends on demand. They can discuss your needs as a new user, or give you general assistance.

The Product Specialists are members of the Applications Support Group, described later in this issue. They are involved in installing and maintaining the software and documentation for their respective products, in addition to using their acquired expertise in appointments with users. One key role of the Product Specialists is helping the Advising Office with training and with recognizing which problems should be referred to them. Because of the demand placed on Consultants and Product Specialists, we ask that you always make an appointment to see them, so that all users have fair access to them.

The Advising Service has always been a dynamic one, changing to accommodate updates in computer technology as well as in the type of computing our users want. Among the tasks performed by Advising services are testing and documenting new versions of products before they are released to users, writing and reviewing documentation, and creating and testing tools. Advising Services ensures that user feedback is incorporated into all designs.

Over the past year, Advising Services has written many new online helps for our CMS service. Among these are helps for language processors, such as HELP FORTVS and HELP PLIOPT. This summer, the Advising Office has been working with the Communications and Technical Support Group of UTCS to move the File Transfer Service (FTS) from a machine running VMS to the CMS system. Work included rewriting documentation, producing a Technote, and notifying FTS users.

As more and more of our popular programming languages and packages are being adapted to run on microcomputers, the Advising Office is extending support to many of them. Among the most popular of these micro packages are the SAS system under PC DOS, and SPSS/PC+.

The Advising Office is located in the Koffler Centre, Room 308.

Alex Nishri
ALEX at UTORONTO
Roni Moravan
RONI at UTORONTO

Advising Support for Instructional Computing

The Advising Office provides a number of services that will be of interest to those involved in preparing for computing within their department. A seminar, suitable for groups of graduate students or researchers, can be presented by arrangement with Advising Services. This seminar covers various computer services available on campus, with an emphasis on those available at UTCS. The material covered provides a good starting point for making decisions when confronted by the many computing options available. Since the seminar is given by Advising Office Consultants, it is also an opportunity to meet the friendly person who can help you if you encounter computing problems later on.

For University course instructors, the Advising Office provides assistance in managing a large number of computer accounts on the VM/CMS service. We can help you go through the options available as you plan your course. When it comes time to open the accounts, we can assist you in preparing the environment. For example, you may want some files to be accessible to all your student accounts.

Once the course is underway, the Advising Office can interface with the course tutors to ensure that they have the support they need to make the course run smoothly. We can also help the course instructor use the tools available to determine how much of system resources is being consumed by individual student accounts.

For more information, please contact Jon Alexander at 978-HELP.

Alex Nishri
ALEX at UTORONTO

Applications Support Group

The Applications Support Group is responsible for the user side of computer networking, utilities, command languages, and general purpose computer languages. The group consists of two Product Specialists, Steve Younker and Paul Shindman.

Computer networking is a mushrooming area. Many users are already taking advantage of access to the NetNorth network. Through this network, you can send messages, files, or even data to your colleagues at other Universities. You can reach many Universities in Canada, the United States, Europe and Asia by typing a simple command.

To help users who want to use this valuable resource, the Applications Support Group provides seminars and consultation to those who need assistance with NetNorth. If you encounter difficulty getting the network address of your colleagues, Paul Shindman, our "postmaster," can assist you by getting in touch with those in charge at other sites. The Applications Support Group is also evaluating various tools and utilities that will make network access simpler. For more information about NetNorth, see the next article.

As computer networking continues to grow rapidly throughout the world, problems are arising because different vendors have used different technologies and communications protocols to implement electronic mail. This limits the ability to interconnect all the different kinds of computers. As a partial solution, an international communications body has recommended the adoption of a standard electronic messaging protocol, known as X.400. Because UTCS believes that X.400 is a strategic direction, the Applications Support Group, working with the

continued...

Applications Support Group continued

Communications and Technical Support Group, are setting up a pilot project this September using the University of British Columbia's EAN mail system. EAN follows the X.400 model, and we believe that the experience we gain from this pilot will be important in providing future electronic mail services.

Many of the users accessing computer networking services are doing so from microcomputers. Our experience has been that many such users find the procedure for accessing another computer, possibly a mainframe, from their own micro to be tedious and frustrating. Using a communications package called ProComm, the Applications Support Group is investigating ways of automatically implementing the logon procedure necessary to access another computer. We are also looking into the feasibility of software that would automatically exchange electronic mail with another machine, which would act as a central "post office." With such software, electronic mail users would not have to deal with any machine other than their own personal computer.

In the area of personal computers, the Applications Support Group has been evaluating various FORTRAN compilers. We have compared compilers from the mainframe as well as those for the microcomputer. We hope to use the information we have gained to write suitable documentation and improve our consulting support. Owners of IBM personal computers (or compatibles) should note that WATFOR-77 (Waterloo's full FORTRAN 77 compiler featuring fast compile times) is available at a very low cost from UTCS.

Support for other general purpose languages used on personal computers is being considered. We welcome your suggestions.

The Applications Support Group also writes documentation and tools, and develops Consulting support for systems like CMS, WYLBUR, TSO, UNIX and APL. For example, an improved set of local helps was recently installed on CMS. (To see them, select the "UTCS" option in the menu presented when the HELP command is used.) An example of a new tool is the improved version of the CMS ROUTE command. ROUTE simplifies selection of a printer destination, so that you need not worry about such issues as whether the printer is accessible through a network or not.

We hope that this article gives you an understanding of the sort of services that the Applications Support Group provides. If you have any questions or suggestions, please don't hestitate to contact Steve Younker, Paul Shindman, or me.

Alex Nishri
ALEX at UTORONTO

Networking News

One of the latest and most fascinating developments of modern computing is that of networking. Computer networks, either autonomous or linked to the telephone network, now connect thousands of universities, institutes, and businesses around the world.

Many computers at U of T are connected to some of these networks. One of the fastest and most versatile networks available to UTCS users is NetNorth. This network connects more than 60 computers at 23 universities (and the National Research Council) from British Columbia to New Brunswick. Computer users at UTCS can communicate with colleagues who are on the network and thus share information via interactive messages and electronic mail; send and receive documents, programs and data; and access several file server computers around the network.

continued...

Networking News continued

NetNorth is in turn connected to the BITNET network in the United States, and through BITNET to the EARN network in Europe. EARN itself connects to various other networks in individual countries, such as the JANET network, which has over 250 sites in Great Britain. The NetNorth/BITNET/EARN network combination currently connects more than 1500 computers at over 1200 institutions of higher learning and research in 19 countries and four continents.

Membership in NetNorth is restricted to specific classifications: degree-granting institutions, institutions of higher learning, nonprofit organizations of higher learning, and industrial, government, or commercial organizations with substantial links to higher education.

In light of these restrictions, use of NetNorth must be consistent with the network's goal of facilitating the exchange of noncommercial information in support of a member institution's mission of education and research. This ensures the continued high quality of the network.

For the technically inclined, the NetNorth connections are by dedicated telecommunication lines. Both IBM and non-IBM computers are supported, so that a CMS user at U of T can communicate with colleagues at a UNIX computer site in California, or a VMS site in Sweden. The network runs on a "store and forward" principle; information originating at a given site is received by intermediate network sites and forwarded to its destination. Information is forwarded on an immediate basis, subject to resource and line utilization. Transmission times are very fast; a file sent to California or Europe takes anywhere from a few minutes to a few hours to send!

In order to link with other networks, "gateways" have been developed around the network to interconnect with CSNET (computer science research departments and institutions), USENET (the UNIX mail/news network), and ARPAnet (the U.S. Defense Advanced Research Projects Agency). There are also links to other networks such as JANET, CDNnet, and MAILNET.

CMS users at UTCS have easy access to the NetNorth network. The CMS NOTE and SENDFILE commands are used to send mail and files to other users. For example, once you know that your colleague at the University of Alberta has an account JSMITH, to send a note you simply say:

```
NOTE JSMITH AT UALTVM
```

where UALTVM is the node name of the computer at U of A. Your colleague must supply you with the account name.

For assistance with node names, you may contact Advising Services at 978-HELP. There are no additional charges for sending files over NetNorth; sending a letter to Europe not only takes less than a day (in most cases), but actually costs less than mailing a letter!

NetNorth provides a unique means of communicating with other researchers and academics, a means that we hope our users will take advantage of. If you require more information on NetNorth or electronic mail, please call me at 978-6878.

Paul Shindman
PAULIE at UTORONTO

The Imaging/Humanities Support Group

The Imaging/Humanities Support Group (I/HUM) is responsible for developing and supporting text processing and graphics on micros and UTCS' various mainframe services. In addition, we work with the University's new Centre for Computing in the Humanities to promote the appropriate use of computers in the various humanities disciplines. We are located in the Koffler Centre, Room 308 (near the U of T Computer Store).

For many years the focus of the I/HUM Group has been on mainframe-oriented computing. In this area UTCS offers:

Text Formatters

- SCRIBE (on CMS and GP UNIX).
- *troff* and associated packages (on GP UNIX).
- WSCRIPT (on CMS and MVS).

Output devices

- Xerox 8700 Laser Printer (line printer and pseudotypesetting).
- Calcomp Pen Plotter (4-colour).
- Gould Plotter.
- CAT Phototypesetter (soon to be replaced, see below).

In the past year, however, the I/HUM Group has seen a lot of changes. Many of these changes are exciting for us, and we hope they will be of interest to many of you. The major areas of change involve UTCS' adoption of the PostScript printers, and the growth of support for microcomputer systems.

PostScript (a computer-oriented, page-description language) has been growing in prominence in the computer world. The first PostScript product — the Apple LaserWriter — set new standards for quality of output (both text and graphics) and ease of use. Together with the development of the Apple Macintosh, it set the stage for the growing desktop-publishing industry. Since then, other companies have announced new PostScript output devices, and UTCS is in the process of acquiring both PostScript **laser printers** and a Linotronic 100 PostScript **typesetter.** Both the laser printers and the typesetter will be able to accept PostScript data that can be easily generated on our GP UNIX and CMS computer systems and from both the Apple Macintosh and IBM PC microcomputer families.

In addition, we have substantially upgraded our support to micro users. Watch for improved support from the I/HUM Group in the form of micro-oriented courses, improved word-processing advising and support, and improved output facilities that are aimed at micro users.

Plans for the moment include:

- **WordPerfect Training**

  Beginning in the fall, we will offer training in WordPerfect — the first in what might be a series of micro-oriented courses we hope to develop. The course was developed during August and early September by Pat Hood and Vera Petrashkewych, and will be given by Vera during Pat's maternity leave. See the article announcing this course, later in this issue.

- **Cash-over-the-counter Micro Laser Printing**

  Last year we introduced our Micro Laser Printing Service, allowing microcomputer users to produce formatted output on UTCS' 8700 laser printer using almost any word-processing program. This has proven to be a popular service, since a document containing hundreds of pages can often be printed in less than an hour. Sometime this fall, we plan to make Micro Laser Printing even easier to use, al-

continued...

Imaging/Humanities Support continued

lowing customers to pay cash when they use the service, rather than first opening a CMS account.

- **PostScript Laser Printing**

  UTCS will be acquiring high-quality PostScript laser printers and hopes to make them available to our UNIX, MVS, and CMS users, plus the micro-computer community. Although the service will not be able to easily print documents as large as those that can be handled by the Micro Laser Printing Service, we expect that people with documents up to 100 pages in length may want to consider this alternative. Current plans allow for both billing through the UTCS accounting scheme, and cash payment (for micro-computer users).

- **A PostScript Typesetter**

  UTCS has ordered an Allied Linotronic 100 typesetter with the PostScript option and will be making this available to the UNIX, MVS, CMS, and microcomputer communities. This device is a true typesetter (producing output on photographic paper at resolutions up to 1200 dots per inch) and can print both text and graphics. Indeed, its capabilities are identical to the PostScript laser printer family, except that it prints at a much higher resolution. Coupled with a PostScript laser printer (such as a personal Apple LaserWriter, or one belonging to UTCS), which acts as an inexpensive proofing device, we will be able to offer typesetting services at a price competitive with services available elsewhere.

- **SCRIBE and *troff* Support for PostScript Output Devices**

  UTCS will be supporting both SCRIBE (on CMS) and *troff* (on UNIX) as formatters that can drive the PostScript laser printers and typesetter. In this way, mainframe users will have access to output of the highest quality. At the moment there are no plans to provide PostScript support from SCRIBE on our GP UNIX machine. Please call Terry Jones at 978-4924 if this will cause you problems.

- **SAS/GRAPH and PostScript**

  UTCS is developing a SAS/GRAPH Driver that will allow users to produce graphical output from SAS on either a PostScript laser printer or UTCS' typesetter.

  In the next article, you will find a discussion of graphics at UTCS. It provides quite a bit of detail about what we currently offer in the way of graphics capabilities.

- **Polaroid Palette**

  This device allows you to capture graphical material created on an IBM PC and put the image on either film or photographic paper. Sometime in the early fall, UTCS will make this device available to any of our customers willing to come to the Micro Lab and produce the images they want. There will be no charge for using the device, but you will have to supply your own materials.

- **Humanities Computing Support**

  The major news in humanities computing in the past year has been the creation of the University's new Centre for Computing in the Humanities (CCH). Of course, CCH is independent of UTCS, but we expect to be working closely with them in several areas. Both Lidio Presutti and I are developing new software for use by humanists. In addition, we might be involved in providing other services. For example, the WordPerfect training materials are being developed in part because of some discussions with CCH. We are also very interested in the emerging desktop-publishing industry and hope to share the knowledge we are gaining with CCH and with the University community in general.

continued...

Imaging/Humanities Support continued

There have been changes in other areas as well. In particular, we have acquired a significant amount of software in both the micro and mainframe areas that we would be glad to show you. If you are interested or have any suggestions, please call me at 978-3995.

John Bradley
BRADLEY at UTORONTO

Graphics at UTCS

It's September again and time for a review of graphics available at UTCS.

Micro Graphics

The UTCS Micro Lab has a great deal of graphics hardware and software. Virtually every IBM PC we have is capable of graphics. Some are equipped with Hercules Graphics cards that display high-resolution monochrome graphics. Others have colour graphics cards, for when colour is needed. We also have a Polaroid Palette for producing presentation-quality 35mm colour slides. This can add a touch of professionalism to your presentation while making it much more appealing to your audience.

We have two Apple Macintosh machines in the lab now. As you may know, the Macintosh is almost totally a graphics machine. We also have Thunder Scan, which works with the Mac to digitize a photograph for inclusion in your report or paper. These pictures can be exported to IBM PCs for use with some of the popular drawing programs.

A couple of new additions to the Micro Lab are very graphics oriented. We now have an Atari 1040ST and an Amiga. Both the Atari and the Amiga have colour graphics and sound capabilities that are dazzling, but the Amiga is especially stunning. The Atari is an inexpensive machine that some departments at U of T are using as graphics terminals instead of expensive, single-function dedicated graphics terminals. They are also being used in business as cost effective replacements for regular video terminals. Both the Atari and the Amiga come with a mouse for easier manipulation of graphical images.

On the software side for micros, we have an array of drawing and painting packages for the various machines as well as some Computer Aided Drafting (CAD) software for the IBM PC. We also have graphics terminal emulation software that will enable you to view mainframe graphics on your micro. A product called 35mm Express is available to make graphs, charts, and pictures for the Polaroid Palette. REFLEX and Lotus can do business graphs. We also have a few graphics packages on order that will be described in future issues of *ComputerNews.*

Mainframe Graphics

We have a four-colour Calcomp Pen Plotter and a black and white Gould Electrostatic Plotter. Both are connected to our IBM MVS system and are accessible from all of our mainframe systems.

We also have a Tektronix 4010 graphics terminal available in the Education Facility, located in the Koffler Centre, Room 308. This allows you to display interactive mainframe graphics on a video screen before sending them to the more expensive hardcopy devices.

As mentioned earlier, a number of the micros in the Micro Lab (also located in Koffler Centre, Room 308) can display graphics. These can be used to display mainframe graphics, and some allow you to capture the graphs on floppies and/or print them on micro printers or plotters.

continued...

Graphics at UTCS continued

The mainframe software available for graphics includes SAS/GRAPH, Surface II, Plotbasic, and Plotbasic Extended. SAS/GRAPH can produce pie, bar, line, star, surface, contour, and many other types of plots. We also have maps of Canada that can be used with the Canada Census information stored here. Maps of the world and the United States are also available. The latest release of SAS/GRAPH available at UTCS now supports interactive graphics when accessing the mainframe in a fullscreen fashion. It is thus very convenient to edit your SAS program, produce and plot data, and view the results on your graphics terminal (or micro) without even leaving your seat. Final results can then be sent to one of our hardcopy devices. We have also been experimenting with an Apple LaserWriter desktop laser printer as a SAS/GRAPH hardcopy device.

Surface II is specifically designed for contour plots and surface plots. Plotbasic and Plotbasic Extended are sets of FORTRAN-called subroutines that allow graphics at the lowest level. Point, line, axis, shape, and symbol drawing routines allow you to produce custom plots exactly the way you want them.

If any of this sounds interesting, please give me a call at 978-4924; I can give you more information or demonstrate some of the items I have mentioned.

Terry Jones
TJ at UTORONTO

WordPerfect Microcomputer Course

Beginning in October, UTCS will present the new short course "Introduction to WordPerfect." It will introduce beginning, IBM-oriented microcomputer users to the wide range of functions available in the WordPerfect word-processing package. The course will consist of two parts: Introduction to WordPerfect and Advanced Topics in WordPerfect. Each part will take five days, two and a half hours per day. Extensive hands-on exercises will be provided throughout the course so that students can apply the material presented and reinforce the skills they learn.

To register, please contact the Education Coordinator at 978-4565. Further details about the course content can be obtained by contacting Vera Petrashkewych at 978-6050.

Patricia Hood
PHOOD at UTORONTO

The Statistical & Numerical Analysis Computing Group (SNAC)

The Statistical & Numerical Analysis Computing Group (SNAC) is responsible for supporting applications software for statistics and numerical analysis. This includes mainframe packages available through CMS, TSO, and GPJS, as well as microcomputer packages. In the past few months, the SNAC Group has also assisted in preparations for the new Cray service.

The SNAC Group is once again up to its full complement of three staff members. Dr. Andrzej Pindor joined us last December. He came from a research associate position in the Physics Department at the University of Toronto, with a strong background in FORTRAN programming and numerical analysis. Joyce Bernstein joined us in August of this year. She is completing her Ph.D. in statistics at the University

continued...

SNAC continued

of Toronto and brings considerable experience as a working statistician to her new position. Joyce will be working half-time for a few more weeks until her thesis is completed.

Over the past few months, the SNAC Group has installed several new releases of statistical software on both the MVS and CMS systems. In particular, SAS Version 5.15 will be available for user test on MVS on September 8 (see next article).

SAS Version 5.15 will be available for test on CMS later in the fall. BMDP '85 was installed on MVS in June (see "BMDP '85 Available for Testing on MVS" in the May/June issue). GENSTAT Version 4.04B was installed on MVS in May of this year. The latest version of Minitab, 5.1, was installed for user test on CMS at the end of August.

The SNAC Group is now working in several areas to support statistical and numerical analysis on microcomputers. SAS under PC-DOS is now running on close to 90 micros at the University of Toronto under the U of T site license (see the article "SAS and SAS/STAT for Microcomputers" in the July/August issue). At present, base SAS and SAS/STAT are ready, and other SAS Institute products will be evaluated as they are released. As funds become available, packages are being acquired and made accessible for demonstration and testing at the UTCS Micro Lab. At present, SAS/PC, SPSS/PC+ with Advanced Statistics, Minitab, and POWERSTAT are available for testing. The SYSTAT package is on order and should be here later in the fall. Reviews of a number of these products will appear in the next edition of the *Academic's Guide to Microcomputer Systems.*

Both the SAS/CMS101 and SAS101 short courses are being offered and continue to receive very positive evaluations. Short courses to provide an introduction to numerical analysis on the Cray are in preparation. Workshop sessions have been added to the SAS201 short course, and it is being offered this September. Short courses on SAS/PC are being considered for later in the year, once micros are available in the UTCS Education Facility.

It has been a busy summer and promises to be a busy fall. Please call me at 978-6509 if you would like to discuss the directions that the SNAC Group is taking.

Dr. William Fehlner
FEHLNER at UTORONTO

SAS Version 5.15 Available for User Test on MVS

A maintenance release of SAS will be available for user testing under MVS on September 8. This release, SAS Version 5.15, is a replacement for SAS 5.08. We plan to remove SAS 5.08 once SAS 5.15 has been fully tested. The current production version, SAS 82.4, will remain available until SAS 5.15 is made production.

To use SAS 5.15, you should use the following JCL in Batch programs:

```
// EXEC SAS,LEVEL=515
```

or to access SAS interactively from TSO:

```
sas level(515)
```

Users are strongly encouraged to begin testing SAS 5.15. Base SAS, SAS/STAT, SAS/GRAPH, SAS/OR, SAS/ETS, and SAS/FSP are all available. Programs or sequences of interactive commands used with SAS 5.08 should work without change with SAS 5.15. There are a number of bug fixes in SAS 5.15, and we will be reporting on these in subsequent issues.

continued...

SAS 5.15 on MVS continued

Users who have accessed SAS 5.08 from their SAS/PC session using the RLINK facility can upgrade to SAS 5.15 very easily. Simply change the "level(508)" clause in the RLINK file you are currently using to "level(515)". All display manager commands remain the same.

All the Version 5 editions of SAS user's guides remain up to date for SAS 5.15. In addition, the *SUGI Supplemental Library User's Guide,* Version 5 Edition was announced in June of this year. This manual is now available for reference at the UTCS Information Office. For information on ordering a personal copy of this manual, please contact Dale Wright at 978-4990.

Anyone with questions or problems about SAS 5.15 should phone Advising Services at 978-HELP.

Dr. William Fehlner
FEHLNER at UTORONTO

GP UNIX News

I would like to take this opportunity to introduce the GP UNIX service to new users, and afterwards to review some of the work that we have done on the service over the spring and summer.

The UTCS GP UNIX offers a general purpose, timeshared, multitasking service on a VAX-11/750 currently running Release 4.2BSD UNIX.

Document Preparation

In the area of document preparation we provide:

- Access to SCRIBE and *troff* text formatters.
- Pseudotypesetting on the Xerox 8700 Laser Printer with SCRIBE.
- Phototypesetting with both SCRIBE and *troff.*
- Bulk printing at reasonable rates on the 8700 laser printer.
- Utilities supporting table formatters, scientific symbol typesetting, automated reference handling, spelling correction, style checking, and a choice of fullscreen or line-oriented editors.

Electronic Mail

- GP UNIX offers a sophisticated electronic mail environment with automatic routing to several international networks such as CSNET, CDNNET, ARPAnet, BITNET, NetNorth, DEC E-net, Mailnet, ACSnet, and UUCPnet. There is also a choice of sophisticated mail interfaces and access to the U of T Local Area Network (UTCS, CSRI, and Engineering).

Program Development

- GP UNIX offers full access to the sophisticated programming tools available under 4.2BSD. In addition we offer access to compilers such as FORTRAN-77, Turing, and C++.

Access to UTCS IBM Systems from UNIX

- GP UNIX offers remote job submission capabilities to the UTCS IBM services, while maintaining and manipulating files on the GP UNIX VAX.

Access to USENET

- GP UNIX offers access to an international information exchange network called USENET.

The GP UNIX Systems Group has been busy throughout the summer working on enhancing the performance of the GP UNIX service. Much painstaking work has

continued...

GP UNIX News continued

gone into tweaking maximum performance from the operating system or kernel at the lowest level. Many system utilities known to slow down the system have been replaced with more modern and efficient utilities, or have been extensively reworked.

The hardware configuration of the machine did not escape close scrutiny either. The Systems Group, in conjunction with the Communications and Technical Support Group (CTS), have completely reorganized the I/O configuration and bus organization on the machine. The major improvement to the hardware was the addition of a second UNIBUS adaptor, allowing a much improved bus throughput.

The changes to software and hardware have resulted in a significant improvement to the performance of the machine.

In addition to enhancing performance, the GP UNIX Group has been busy expanding the utilities available on the machine. Currently, there may be well over 500 commands available to users on the UNIX system, and this number tends to grow on a weekly basis. This number is not meant to alarm users but merely reflects the flexibility that GP UNIX offers. Many of the new utilities are in the public domain and arrive via USENET.

Here is a tiny sampling of available utilities in /usr/local:

- File transfer utilities: kermit and xmodem.
- An electronic calendar and reminder utility.
- An electronic spreadsheet.
- A luxurious command interface: tcsh.
- An interactive spelling checking /correcting program.

Users on the GP UNIX system should develop the habit of reading the newsgroup *general* on a regular basis in order to remain informed of developments on the machine. It should be pointed out that almost all utilities located in /usr/local are officially unsupported and are there merely for the convenience of users; questions relating to utilities located in that area should be mailed to molnar@utcs.

Finally, the most important item of all. UTCS has announced a major rate reduction for the GP UNIX service. (See the article in the July/August *ComputerNews,* or pick up a copy of the UTCS Rate Schedule from the Accounting Office or the Information Office.) The UTCS GP UNIX service has become a very attractive alternative for all users or potential users.

The GP UNIX Group will continue to carefully scrutinize and monitor the performance of the machine, and to update and improve the service wherever possible. We feel strongly committed to offering a top quality timeshared service.

Should there be any questions or comments about the changes to the system, or about the service, please don't hesitate to contact me at 978-8853.

Tom Molnar
molnar@utcs

Accounting Services

The Accounting Services Office, located in McLennan Physical Laboratories, Room 337, handles setting up, changing, and deleting accounts and access codes. This group also answers inquiries about the status of accounts and in general assists customers with accounting problems or concerns. Accounting Services hours are 9:00 a.m. to 5:00 p.m., Monday through Friday.

Customers who plan to use University funds for computing, and who are not familiar with University or UTCS accounting systems and procedures, should refer to the UTCS GUIDE TO PRODUCTS AND SERVICES: Accounting, available from the Accounting Services Office and the Information Office (Engineering Annex, Room 206). Customers planning to use external funding should contact the UTCS Marketing Consultant at 978-6875.

Funding of accounts is done by raising an Encumbrance Memo, a blanket purchase order for use within the University. This form, as well as the Encumbrance Memo Change form, is available from the Purchasing Department, 7th Floor, 215 Huron St., 978-2353. The order form for these includes instructions on their use.

An Account Balance letter is sent to alert the account holder when the remaining balance reaches 20% of the account's total allocation. If additional allocation is not made, the account is locked on the first day it shows a negative (overdrawn) balance.

The Internal Rate Schedule is published towards the back of this issue of *ComputerNews.* Copies of this and the External and Commercial schedules are available from the Accounting Services Office, the UTCS Information Office, or from Ihor Prociuk at 978-6875.

Marg Doherty
DOHERTY at UTORONTO

Protect Your Codes

Users should take the following precautions to ensure optimal security for their Service Access Codes (SACs).

1. Think of your SAC and password as a credit card or blank cheque - **Don't Lose Them.**
2. **Do Not Imbed Job Statements** in datasets.
3. **Obscure the Password** at the start of your terminal session.
4. **Avoid Shared SACs** by establishing a separate SAC for each user.
5. **Change Your Password** at regular, frequent intervals.
6. Instruct the Accounting Services Office to **Lock Your SAC** if you do not plan to use it for a period of time.
7. **Set Expiry Dates** for SACs of limited duration.
8. **Watch the Balance or Accumulated Usage** to determine whether unauthorized activity is taking place on your SAC.
9. **Request a Spending Limit** on the SAC.
10. **Report Suspected Misuse Immediately** to the Accounting Services Office.

Marg Doherty
DOHERTY at UTORONTO

Engineering Annex Terminal Site

The first floor of the Engineering Annex will undergo minor changes during the fall. Room 104 will no longer be available as a public site; the card reader, keypunch machines, and card interpeter will be removed, as the demand for those services has declined.

Eight DEC LA36 hardcopy terminals will be moved to Room 107B, which also contains eight XT-100 terminals directly connected to CMS. The Gould plotter and SSI QT600 line printer will be moved to Room 103, where the complement of 27 XT-100 terminals and a 1641 Diablo are located. All terminals in this room are connected to Network Terminal Servers (NTS) and can access UTCS public services (GP UNIX, VM/CMS, and MVS).

Vera Cabanus
VCABANUS at UTCS

Sidney Smith Terminal Site

The Sidney Smith Terminal Site is located at 100 St. George Street and occupies Rooms 2105, 1073, and 1071.

Here is a summary of the hardware and services it provides:

- Room 2105 has 15 terminals connected to Network Terminal Servers (NTS): three LA36 (hardcopy) terminals, two VC303A (CRT) terminals, and ten XT-100 (CRT) terminals are available for any UTCS customer to access the IBM MVS system (TSO, WYLBUR), the VM/CMS system, or GP UNIX. The LA36 and VC303A terminals can also access APL. In addition to the terminals, there is also an SSI QT600 line printer available.
- Room 1073 houses 18 XT-100 terminals hardwired to CMS only; plus an SSI QT600 line printer.
- Room 1071 contains 32 Texas Instruments Professional computers. Each runs under MS-DOS with UNIX software modified by the Department of Computer Science (DCS); all have access to the line printer in Room 1073. These micros are designated for use in teaching first-year DCS students.

If you have any questions about the Sidney Smith Terminal Site, please call me at 978-2043.

Dan Lemmon
LEMMON at UTORONTO

Scarborough Campus Computer Centre

Several changes have taken place in the past year. Two Megabytes of memory have been added to the UTCSSCB machine, so that each VAX-11/750 now has 5M of memory.

At the same time, 32 asynchronous ports were added to UTCSSCB, bringing the total number of ports to 96. This allowed us to add more terminals for public use. An Imagen 8/300 Laser Printer was also installed on UTCSSCB, along with several new software packages: e.g., M-Prolog, Softquad Typesetting Package, a new version of UNIXSTATS, S Statistical Package, and Graphical Kernel System (GKS). Lastly, six

continued...

Scarborough Campus continued

Hayes 1200-baud modems were installed for home access.

Here is a summary of the hardware and services now available at the Scarborough Computer Centre:

- Local UNIX services - 60 terminals shared by two VAX-11/750 systems. Files may be transferred from several other UNIX systems at U of T locations via the network.
- Remote Job Entry to the IBM system is provided from the SCB (UTCSSCB) system. This includes access to laser printing on the Xerox 8700 Laser Printer.
- UNIX-based Spectrix 30 system that provides an academic and administrative word-processing service.
- Imagen 8/300 Laser Printer for pseudo-typesetting and graphics output.
- Six Hayes 1200-baud modems that provide phone access to both VAXs (UTCSSCA and UTCSSCB).
- The Local Area Network is provided by four terminal servers connected to both the VAX systems and PACX.

The Computer Centre supports all courses involving computing as well as other academic and administrative computing at the College. It also provides access to other computing services offered by UTCS. The normal hours of operation at the Centre are published in each issue of *Computer-News,* under "UTCS Terminal and Advising Sites."

William Barek
barek@utcsscb.uucp

Erindale Campus Computer Centre

This summer has brought at least one major change at the Erindale Campus Computer Centre. The old VAX-11/780 system has been replaced with a new VAX 8200 system.

The 8200 was announced by Digital Equipment Corporation last January. It comes with 8M of memory and two 456M Winchester drives. This machine should provide ample computing power for our users. It will be used by undergraduate departments and by researchers for instructional computing; researchers are billed for their use of the system. A new chargeback rate was also introduced this year; it includes online storage charges and a reduced rate for nonprime-time usage.

The VAX 8200 is running Version 4.4 of VMS and the following software: SCRIBE, Minitab, SAS and SAS/GRAPH, VMS FORTRAN, TOPOS (graphics), Eunice (includes Pascal, C, LISP), Writer's Workbench, Kermit, and soon SPSS-X. Other equipment on the VAX 8200 includes a Facit letter-quality printer, an HP 7580 Plotter, an Apple LaserWriter for pseudo-typesetting, and a Scan-Tron Optical Scanner for multiple choice examinations in certain undergraduate courses.

The above system is networked via a 4800-baud DECnet link to a VAX-11/750 on the St. George campus; the 750 provides for file transfers to other systems on campus and a Remote Job Entry link for submissions to the IBM system. Dial-up facilities are provided only for research users on the system.

The other system at Erindale is a VAX-11/750 running 4.2 Berkeley UNIX. This machine is primarily used for Computer Science courses. It is networked via a 4800-baud TCP/IP link to the downtown Computer Disciplines Facility, which allows for file transfers. Dial-up facilities are provided for students on this system.

Both machines are accessible from hardwired terminals located in Rooms 2045 and 2040 in the South Building, Room 235 in the North Building, and Room 1061A in

continued...

Erindale Campus continued

the Robarts Library. Aside from hardwired terminals, terminals on the InterLAN Terminal Server Network provide access not only to the two machines at Erindale, but to the UTCS machines on the St. George campus via PACX.

Here is a summary of the services available at Erindale (all terminals mentioned are XT-100s).

- Room 2040 of the South Building has six terminals connected to UNIX, and 12 connected to VMS, available for student use 24 hours a day.
- Room 2045 of the South Building has 26 terminals connected to UNIX, available for student use 24 hours a day.
- Room 2039 of the South Building houses three terminals connected to VMS, and two connected to NTS, for Researchers' use only. Access is restricted to building hours.
- Room 235 of the North Building contains six terminals connected to VMS, and two connected to NTS, available for student use. Access is restricted to building hours.
- Room 1061A (located at Robarts Library for Erindale Researchers only) houses one XT-100 terminal connected to VMS.

If you have any questions about the Erindale Computer Centre, please call me at 828-5311.

Joe Lim
joe@utcseri

VMSECURE Replaces DIRMAINT on CMS

On August 20, UTCS replaced the old DIRMAINT command on the CMS service with a new product: VMSECURE. Both pieces of software are used by the system and by users to control various options of their accounts such as passwords, disk storage, and region size.

DIRMAINT had many cumbersome characteristics that made it unwieldy to use: slow speed (up to two hours for increasing minidisk size), poor documentation, and a combination of either line-mode or fullscreen commands. VMSECURE is a much faster, well-documented, and supported package that offers fullscreen access and several new features.

One of these new features is the NEWDISK subcommand of VMSECURE. You can now create your own additional minidisks without contacting the UTCS Accounting Office. As well, you can change the size of the disk with the RESIZE subcommand and delete the disk with the MAINT subcommand.

The VMSECURE subcommands execute immediately, while you are at your terminal, so that disks can be resized or created in a minute or two at most. Information regarding your account can be displayed on the terminal and can either be stored on your disk or printed immediately.

We hope that our CMS users find VMSECURE a helpful tool. The VMSECURE help files are available on CMS by entering:

```
help vmsecure menu
```

If you have any questions about VMSECURE, or need any assistance using it, please contact Advising Services at 978-HELP.

Paul Shindman
PAULIE at UTORONTO

UTCS MicroVAX II Maintenance

Effective immediately, UTCS has expanded the scope of its hardware maintenance program to include servicing DEC MicroVAX II computer systems. The full range of services is offered, i.e., annual on-site contract, annual depot contract, and per call service.

The level of service is comparable to DEC's Basic Maintenance Contract. The price for the UTCS annual on-site contract would be about 70 percent of DEC's and the annual depot contract about 65 percent of DEC's Basic price.

Here are some examples of maintenance price per month:

MAINTENANCE PRICES

	Item	DEC Basic	UTCS On Site
630QY-A2	MicroVAX II CPU Floating point 1M on board memory BA23 box enclosure 1M additional memory	$131.00	$ 92.00
630QB-A2	as above except with BA123 box enclosure	$146.00	$102.00
RQDX2	Disk controller	$ 15.00	$ 11.00
RD52	31M disk drive	$ 25.00	$ 18.00
RD53	71M disk drive	$ 49.00	$ 34.00
RX50	800K dual diskette drive	$ 10.00	$ 7.00
TK50-AA	95M streaming cartridge tape	$ 28.00	$ 20.00
TQK50	Tape controller	$ 10.00	$ 7.00
DZQ11	4-Asynchronous-line driver	$ 14.00	$ 10.00
DHV11-	8-Asynchronous-line driver	$ 19.00	$ 13.00
DHV11-AP	Synchronous communications interface	$ 18.00	$ 13.00
MS630-AA	1M add-on memory	$ 23.00	$ 16.00
MS630-BA	2M add-on memory	$ 46.00	$ 32.00
MS630-BB	4M add-on memory	$ 93.00	$ 65.00

For more information regarding this service, please call Kam Mark at 978-5050.

Kam Mark
kam@utcs

UTCS Noncredit Short Courses

A number of noncredit short courses are available to faculty, staff, and other users of the various products and services supported by UTCS.

Registration is required for short courses because of the limited seating capacity in the Education Facility, and the number of terminals available for our hands-on courses. Registration forms may be picked up in the Engineering Annex, 11 King's College Road, Room 207.

A nonrefundable Administration Fee of $10.00 per course is payable at the time of registration. It may be paid by cash, cheque, or on a Customer Account Number (CAN). In addition, the CAN holder is responsible for any computer charges incurred during the hands-on courses.

The following courses are scheduled for September and October:

FORT/CMS101 - Introduction to CMS for FORTRAN Users

Date:	October 27-31, 1986
Time:	1:00-4:00 p.m.

This introductory course will teach you to access the VS FORTRAN compiler interactively using CMS.

Topics: Editing and managing files; communicating electronically with local and international users; writing command scripts (EXECs); compiling, executing, and debugging FORTRAN programs in the CMS environment.

Registrants must provide a Customer Account Number (CAN) at the time of registration so that a course account on CMS can be set up.

Prerequisite: Working knowledge of FORTRAN.

Course duration: 15 hours

Recommended texts: *CMS Primer, VM/CMS Application Development Guide.*

JCL101 - IBM Job Control Language for Beginners

Date:	October 6-10, 1986
Time:	1:00-2:00 p.m.

This course is intended as an introduction to IBM JCL (Job Control Language).

Topics: Use of the JOB statement to signal the beginning of a job and the end of a previous job; use of the EXEC statement to identify each jobstep and tell the operating system what program or procedure to EXECute; and the identification of a dataset needed for the jobstep by using the DD (Data Definition) statement. Examples will be taken from areas of interest expressed by the class participants.

Prerequisite: Knowledge of a programming language or an operating system.

Course duration: 5 hours

SAS101 - Introduction to SAS

Date:	September 15-19, 1986
Time:	9:30-11:30 a.m.

This course is intended for students experienced in job preparation and submission who want to learn SAS. Basic JCL will be covered as required. Emphasis will be placed on using SAS for exploring data with very basic techniques. This is a hands-on course. Students must bring their System Access Code (SAC) and password to class.

Topics: What is a statistical package? What is SAS? Syntax and definitions, the DATA step, some basic PROCs (e.g., PRINT,

continued...

Short Courses continued

FREQ, PLOT), data set manipulation, creating and managing data libraries.

Prerequisite: Knowledge of an operating system, e.g., CMS, WYLBUR, TSO, UNIX.

Course duration: 10 hours

SAS201 - Intermediate SAS

Date: September 22-26, 1986
Time: 9:30-11:30 a.m.

This course is broken up into five separate, one-hour sessions, each covering a specific topic. Students have the option of choosing which topics are of interest to them and may attend as many sessions as they wish.

Below are some of the more frequently taught sessions. During the first class, the exact order of the sessions will be decided. Other topics will be added, if requested.

Prerequisite: SAS101 or SAS/CMS101

SESSION 1 - Input Formats and Report Writing

Topics: SAS formats, pointer controls and format modifiers, PUT and FILE statements, and LAST and FIRST by-variables; some examples of how these statements can be used together to produce customized reports.

SESSION 2 - SAS Regression Procedures

Topics: Procedures for regression analysis. Similarities and special features of these procedures will be discussed giving the student a better understanding of how to decide which procedure to use.

SESSION 3 - SAS Multivariate Procedures

Topics: Procedures for analysis of variance, multivariate analysis, discriminant analysis, and clustering. Overview of these procedures and their uses will be presented.

SESSION 4 - SAS Macro Language

Topics: SAS Macro Language, which has been greatly expanded in SAS82. New macro features will be discussed and potential uses and abuses will be examined.

SESSION 5 - PROC TABULATE and PROC CALENDAR

Topics: TABULATE, which constructs tables of descriptive statistics from compositions of classification and analysis variables, and CALENDAR, which displays data from a SAS data set in a month-by-month calendar format. Examples of these two new procedures will illustrate flexibility and usefulness.

Course duration: 5 hours

SAS/CMS101 - Introduction to SAS and CMS

Date: October 6-17, 1986
Time: 9:30-11:30 a.m.

The SAS/CMS101 course teaches new users how to access computer facilities interactively using fullscreen CMS. Basic data analysis using the SAS package is also covered.

Users will be able to create, modify, use, and delete data files using the XEDIT and FILELIST facilities on CMS. Using SAS, the student will learn to produce descriptive statistics, display data in charts and plots, and prepare data for more detailed statistical analysis. SAS programs will be run within CMS.

Topics: Basic concepts required to work with the CMS system; management of data files using FILELIST on CMS; editing of files using XEDIT; preparation, submission, and retrieval of jobs; descriptive statistics, definition of terms (i.e., variables, observations, and missing values), and data cleaning.

This is a hands-on course. Students must provide a Customer Account Number

continued...

Short Courses continued

(CAN) at the time of registration so that a course account on CMS can be set up.

Course duration: 20 hours

* * * *

Other UTCS noncredit short courses available, but not scheduled at present, are:

TXT/CMS101 - XEDIT and SCRIBE on CMS
TXT/SCR102 - SCRIBE Formatter
TXT/SCR202 - Special SCRIBE Topics
TXT/UNIX103 - *nroff/troff* on GP UNIX
TXT/UNIX203 - *tbl* Program on GP UNIX

If you have any questions or would like to register for our noncredit short courses, please call me at 978-4565.

Irene Rosiecki
ROSIECKI at UTORONTO

Hours of Service

Thanksgiving Day			
	October 11 (Saturday)	**October 12 (Sunday)**	**October 13 (Monday)**
IBM MVS GPJS(Class B, Calcomp)	10:00-18:00	10:00-18:00	closed
IBM MVS GPJS(Class A, WYLBUR, APL, TSO)	10:00-18:00*	10:00-18:00*	unattended
IBM VM/CMS	10:00-18:00*	10:00-18:00*	unattended
GP UNIX	unattended	unattended	unattended
Normal hours of service for all systems will resume Tuesday, October 14, 1986.			

* *Running unattended outside these hours.*

In the event of any changes to the above schedules, a notice will appear in system messages one week prior to the holiday.

Change Committee

Changes to IBM Academic MVS Machine Services

1. VS FORTRAN 1.1 was removed from FORT OLD, and VS FORTRAN 1.4.1 was made production on July 8.
2. PL/I Release 5.1 was introduced as NEW on July 8.

Changes to Academic VM/CMS Machine Services

1. VS FORTRAN 1.4.1 was made production on July 8.
2. PL/I Release 5.1 was introduced as NEW on July 8.
3. WATFOR-77 1.3 was installed as NEW on July 8.
4. Pascal 2.2 was introduced as NEW, and Pascal 2.1 was made production on July 8.
5. Waterloo C 1.3 was introduced as NEW on July 8.

Changes to Other Systems and Services

1. DUP11 was installed for testing of JNET and Packet Switching Software on July 14.
2. MVS/XA was installed on the Administrative Machine on July 14.

Beverly Scarborough
BEVS at UTORONTO

UNIVERSITY OF TORONTO COMPUTING SERVICES INTERNAL RATE SCHEDULE

Effective September 2, 1986 (UTCS reserves the right to change rates without notice)

IBM 4381-R03 Processor (OS/MVS)

SERVICE	DEFINITION	CHARGES
BATCH SERVICE	General Purpose Job Stream (GPJS)	
Charging Algorithm	SF x (CPU + IOUSE + URC + PDC)	
SF[1]	Service Factor is 2 for Priority 8; 1 for Priority 6 (default).[1]	
CPU	Charge for use of the central processing unit (CPU).	$ 8.50/CPU minute
IOUSE[2]	Charge for Input-Output (IO) usage.	$ 0.30/1000 IOUSE
URC	Unit Record Charge.	
	line (impact) printer	$ 0.10/page[3]
	laser (xerographic) printer	$ 0.023/page[4]
PDC	Peripheral Device Charge.	$ 2.00/tape mount
	line (impact) printer forms mount	$ 3.25/mount[3]
	laser (xerographic) printer forms mount	$ 2.00/mount[4]

[1] A customer's choice of Priority affects job turnaround. Priority 6 jobs (SF=1) generally execute after Priority 8 jobs (SF=2). CPU and IOUSE charges are **reduced** by **one-third** if Class A batch jobs (see the document UTCS GUIDE TO GPJS for a definition of job classes) are **submitted** for processing during the following hours:

00:00:01 to 06:00:00 Monday through Friday
00:00:01 to 10:00:00 Saturday
18:00:00 Saturday to 10:00:00 Sunday
18:00:00 Sunday to 00:00:01 Monday
00:00:01 to 24:00:00 on holidays

[2] IOUSE is the transfer of one block of data between main memory and disk or tape.

[3] See Appendix A for a discussion of available forms and the page charging algorithm for impact printers.

[4] See Appendix C for a discussion of available forms and the page charging algorithm for the laser printer.

CLASS E	Class E is a batch service for programs which require substantial machine resources. Class E jobs generally do not start execution before midnight and overnight turnaround is not guaranteed.	
Charging Algorithm	(0.06 x CPU) + IOUSE + URC + PDC	

NOTE: CPU, IOUSE, URC and PDC have the same meanings and charges as in the Batch Service. A minimum charge of $5.00 is applied to the (CPU + IOUSE + PDC) component of the charging algorithm and only the tape mount portion of PDC is included in the minimum charge calculation. Details on Class E can be found in the UTCS GUIDE TO GPJS.

INTERACTIVE SERVICES

TSO	Time Sharing Option	
Session Charge	CPU + IOUSE + CTC	
CTC	Connect Time Charge.	$ 1.35/hour (prime time)[5] $ 0.90/hour (otherwise)

NOTE: For the TSO service, CPU and IOUSE have the same meaning and charges as in the Batch Service.

WYLBUR		
Session Charge	CPU + IOUSE + CTC	
CTC	Connect Time Charge.	$ 1.35/hour (prime time)[5] $ 0.90/hour (otherwise)

NOTE: For the WYLBUR service, CPU and IOUSE have the same meaning and charges as in the Batch Service.

UNIVERSITY OF TORONTO COMPUTING SERVICES INTERNAL RATE SCHEDULE

Effective September 2, 1986 (UTCS reserves the right to change rates without notice)

IBM 4381-R03 Processor (OS/MVS)

SERVICE	DEFINITION	CHARGES
INTERACTIVE SERVICES (continued)		
I.P. SHARP APL	The I.P. SHARP version of APL.	
Session Charge	CPU + CTC	
CPU	Charge for the use of the central processing unit in CPU Units.	$ 2.00/1000 (prime time)[5] $ 1.33/1000 (otherwise)
CTC	Connect Time Charge.	$ 1.35/hour (prime time)[5] $ 0.90/hour (otherwise)
HSPRINT	Printing generated via the APL utility HSPRINT. Charges are the same as the Unit Record Charges (URC) for the Batch Service (see above).	
Dump/Restore	A customer requested workspace/file dump/restore from tape.	$20.00/request
	NOTE: N tasks and B tasks are not charged for Connect Time.	
	[5] Prime Time is Monday to Friday from 08:00 to 19:00 hours excluding holidays. **The highest rate applicable during any part of a session will be the rate used to charge for the entire session.** Nonprime time rates are two-thirds of prime time.	
STORAGE CHARGES		
Online Storage	One track consists of 47476 bytes.	$ 0.018/track/day
	One block of **workspace** storage (4196 bytes) in I.P. Sharp APL.	$ 0.00156/block/day
	One block of **file** storage (3156 bytes) in I.P. Sharp APL.	$ 0.00124/block/day
Offline Storage	Customer supplied tape (one month minimum charge).	$ 2.00/tape/month
	UTCS rented tape (one month minimum charge).	$ 2.50/tape/month
COMMUNICATIONS SERVICES		
Dedicated Synchronous Access	Dedicated RJE port at 9600 bps or less.	$2000/year
Dial-in Synchronous Access	Connect time charge.	$13.00/hour
	NOTE: Dial-in RJE port facilities are provided only at 2400 bps using Bell 201-C or equivalent modems.	
Dedicated Asynchronous Access	Dedicated PACX port up to 4800[6] bps.	$60.00/year
	[6] The maximum supported speed varies with the machine being accessed. Once a connection is established to one of the UTCS mainframes, the customer is charged the rates quoted in this schedule for resources consumed.	
	NOTE: Customers who wish to connect their own systems or terminals to UTCS computers should contact UTCS Hardware and Communications staff to discuss hardware and/or software requirements.	

UNIVERSITY OF TORONTO COMPUTING SERVICES INTERNAL RATE SCHEDULE

Effective September 2, 1986 (UTCS reserves the right to change rates without notice)

IBM 4381-P02 Processor (VM/CMS)

SERVICE	DEFINITION	CHARGES
VM/CMS	IBM's CMS – Conversational Monitoring System – product.	
Session Charges		
Charging Algorithm	CPU + IOUSE + TCTC + TDISK + PDC	
CPU	Charge for the use of the central processing unit (CPU).	$ 4.75/CPU–minute
IOUSE	Disk/Tape input–output.	$ 0.25/1000 IOUSE[1]
TCTC	Terminal Connect Time Charge.	$ 0.80/hour[2]
TDISK	Temporary online disk space (614,000 bytes/cylinder)	$ 0.07/cyl/hour[3]
PDC	Peripheral Device Charge	$ 2.00/tape mount + $ 8.00/hour

[1] IOUSE is measured in disk and tape SIOs. SIO is an acronym for Start Input Output. An SIO is the transfer of one block of data between main memory and disk or tape subsystems.

[2] The connect time charge reflects the elapsed time between logon and logoff. This includes elapsed time while disconnected.

[3] A customer can request temporary online disk space. This space is released back to the system only when the customer logs off or explicitly releases this space.

SERVICE	DEFINITION	CHARGES
Non-session Charges		
Online Storage	Online disk space. One block is 512 bytes.	$ 0.0167/100 blocks/day
Offline Storage	Customer supplied tape (one month minimum charge). UTCS rented tape (one month minimum charge).	$ 2.00/tape/month $ 2.50/tape/month
VMAC	Virtual memory account charge.	$ 1.75 x MAF[4]/month
Printing	line (impact) printer laser (xerographic) printer line (impact) printer forms mount charge laser printer forms mount charge	$ 0.10/page[5] $ 0.023/page[5] $ 3.25/mount[5] $ 2.00/mount[5]
Account Report	customer initiated detailed report customer initiated summary report	$ 3.00 $ 1.00

[4] MAF is an acronym for Memory Adjustment Factor and is based on the account default and maximum virtual machine size in megabytes.
MAF = ((2 x default) + maximum)/3

[5] See Appendices A and C for available paper forms on impact and laser printers.

UNIVERSITY OF TORONTO COMPUTING SERVICES INTERNAL RATE SCHEDULE

Effective September 2, 1986 (UTCS reserves the right to change rates without notice)

General Purpose UNIX Service

Session Charges

SERVICE	DEFINITION	CHARGES
Charging Algorithm	CPU + CTC	
CPU	Charge for use of the central processing unit (CPU)	$ 0.70/CPU-min (prime time)[1] $ 0.467/CPU-min (otherwise)
CTC	Connect Time Charge	$ 0.80/hour (prime time)[1] $ 0.533/hour (otherwise)

[1] Prime Time is Monday to Friday from 08:00 to 19:00 hours excluding holidays. **The highest rate applicable during any part of a session will be the rate used to charge for the entire session.** Nonprime time rates are two-thirds of prime time.

Non-session Charges

Online Storage	One block consists of 1024 characters	$ 0.40/1000 blocks/day
Offline Storage	Customer supplied tape (one month minimum charge).	$ 2.00/tape/month
	UTCS rented tape (one month minimum charge).	$ 2.50/tape/month
Line Printer	Use of the locally connected line printer	$ 0.10/page
ipr	Printing done on the IBM 4381-R03 by the ipr utility	$ 0.10/page impact printer[2] $ 0.023/page laser printer[2]

Note: Because the laser printer is attached to the IBM MVS system, UNIX customers need an IBM batch account if they intend to use the ipr utility.

[2] See Appendices A and C for available paper forms on the impact and laser printers.

UNIVERSITY OF TORONTO COMPUTING SERVICES INTERNAL RATE SCHEDULE

Effective September 2, 1986 (UTCS reserves the right to change rates without notice)

OTHER SERVICES

SERVICE	DEFINITION	CHARGES
DATAPAC	Use of the DATAPAC facility.	$12.00/connect hour
	NOTE: Customers contemplating using DATAPAC into UTCS should contact a Marketing Representative for further details.	
Plotting	GOULD electrostatic plotter.	$ 2.70 × SF[1]/metre
	CALCOMP 1051, 4-colour, pen plotter.	$52.00 × SF[1]/plotter-hour[2] $ 1.00 × SF[1]/metre[2]
	NOTE: Output destined for plotting can be generated from several UTCS systems. However, because the Gould and CALCOMP plotters are attached to the IBM MVS system, customers must have an account on the IBM MVS system.	
	[1] A customer's choice of Priority affects job turnaround. Priority 6 jobs (SF=1) generally execute after Priority 8 jobs (SF=2).	
	[2] This rate applies when the CALCOMP is mounted with the default pens and paper (form C112). Appendix B gives rates for other paper and pens.	
Typesetting	Use of the C.A.T. phototypesetter	$ 0.25/inch
Other Services	Tape cleaning; a double pass (forward and reverse).	$ 2.00/tape
	Job Handling.	$20.00/hour
	Bursting	$20.00/hour
	Collating	$20.00/hour
	Paper Drilling	$20.00/hour

TERMINAL RENTAL

UTCS has several types of terminals for rent. The rental charge includes maintenance and acoustic coupler. There are minor additional installation and communications costs for limited distance, high speed modems. More information on installation costs is available from a UTCS Marketing Representative. All terminals have a one month minimum rental charge. UTCS also charges for pick-up and delivery unless the customer chooses to do it.

SERVICE	DEFINITION	CHARGES
Video	Cybernex (APL100), DEC (VT100), Lanpar (XT100), Datamedia (Elite 1520)	$ 80/month
	Volker Craig (VC303, VC404), DEC (VT50, VT52), Soroc (IQ120).	$ 50/month
Hardcopy	Letter quality – Xerox (Diablo 1620, 1641)[3] CDI (1030, 1050).	$125/month
	Dot matrix – Decwriter II (LA36)	$105/month

[3] Forms tractor attachment for these terminals is $10/month.

PUBLICATIONS

UTCS stocks a variety of manuals and other documentation which can be purchased by customers. Contact the UTCS Information Office for current prices.

APPENDIX A

Rates for Special Forms Paper on Impact Line Printers

The rates for paper consumption at a UTCS special forms (impact) printer are given below. The first column gives the last two digits of the forms code. The second and third columns describe the form. All paper sizes are in inches and are in the format (length x width). The fourth column is the cost **per page**. The job page count is the **greater** of; the number of lines in the job divided by 60, or; the number of skip-to-top-of-page commands issued by the job. Further information on UTCS forms codes can be found in the UTCS GUIDE TO HIGHSPEED PRINTING. Customers who have special requirements (e.g., pre-printed forms or unusual forms control) should contact UTCS Operations. With the exception of forms codes 30 and 31, all printing done on the forms listed below incurs a $3.25/job forms mount charge.

Table 1: Rates for Special Forms in Impact Printers

Forms Code (last 2 digits)	Description size	type	Price per Page
00	11 x 15	1 part, lined	$0.110
01	11 x 15	1 part, blank	$0.110
02	11 x 15	2 part	$0.126
03	11 x 15	3 part	$0.139
04	11 x 15	4 part	$0.156
05	1 7/16 x 4	labels (1 across)	$0.018
06	15/16 x 3.5	labels (3 across)	$0.019
07	1 7/16 x 4	labels (3 across)	$0.029
08,09	11 x 8.5	1 part, lined	$0.107
10,11	11 x 8.5	2 part	$0.117
12	11 x 8.5	3 part	$0.124
14	11 x 8.5	4 part	$0.136
16 to 18	11 x 9.5	1 part, blank	$0.111
20 to 23	11 x 9.5	1 part, blank	$0.111
30,31[1]	8.5 x 15	1 part	$0.100
32	8.5 x 15	2 part	$0.121
33	8.5 x 15	3 part	$0.132
34	8.5 x 15	4 part	$0.145
35	8.5 x 15	1 part, blank	$0.108
9000		customer supplied	$0.040

[1] Forms codes 30 and 31 request default paper. If these forms are specifically coded, the forms mount charge will be applied.

APPENDIX B

CALCOMP 1051 Paper, Pens, and Rates

Papers and Pens (Forms)

The size and type of paper and the pens to be used are conveyed by means of form names. The form name, mwpi, is comprised of single letter or digit codes for the machine type (m), paper width (w), paper type (p) and ink type (i) (see Table 1 below). The default form is C112. Details regarding the specification of forms can be found in the UTCS USERBOOK Section 3.8PLOTBASIC and 3.8PLOTBASIC SUBTEXT.

Where special paper and/or pens are required, special arrangements must be made with Operations before the jobs are submitted with the appropiate special form names (i.e. those with X's in them). The special papers and pens are supplied by the customer and extra charges for the manual handling of these jobs may be levied by Operations.

Charging Algorithm

A Calcomp plot will be charged by; 1) the elapsed time on the plotter, 2) the length of plot, 3) a setup charge for any request other than forms C111 and C112, and 4) the Service Factor of the job which produces the plot.

The rates are given in Table 2 below. The Service Factor affects the plotting cost. Priority 6 has a Service Factor of 1 (the default) while Priority 8 has a Service Factor of 2. Priority 8 jobs cost twice as much as Priority 6 jobs.

Table 1: Codes for Form Names

Machine type (m)	Paper Width (w)	Paper type (p)	Ink type (i)
C (Calcomp)	1 (11" wide) 2 (34" wide) X (special type)	1 (translucent) 2 (vellum) X (special type)	1 (pressurized ball) 2 (liquid ball) X (special type)

Table 2: Calcomp 1051 Rates

Description[2]	Form[1] name	Paper charge ($/metre)[3]	Elapsed time ($/hour)[3]	Set up ($)
11" Trans. PB.	C111	1.00	40.00	NA
11" Trans. LB.	C112	1.00	52.00	NA
11" Vellum PB.	C121	2.00	40.00	3.25
11" Vellum LB.	C122	2.00	52.00	3.25
34" Trans. PB.	C211	2.00	40.00	3.25
34" Trans. LB.	C212	2.00	52.00	3.25
34" Vellum PB.	C221	4.00	40.00	3.25
34" Vellum LB.	C222	4.00	52.00	3.25
11" Trans. SPen.	C11X	1.00	52.00	3.25
11" Vellum SPen.	C12X	2.00	52.00	3.25
11" SPaper. SPen.	C1XX	NA	52.00	3.25
11" SPaper. PB.	C1X1	NA	40.00	3.25
11" SPaper. LB.	C1X2	NA	52.00	3.25
34" Trans. SPen.	C21X	2.00	52.00	3.25
34" Vellum SPen.	C22X	4.00	52.00	3.25
34" SPaper. SPen.	C2XX	NA	52.00	3.25
34" SPaper. PB.	C2X1	NA	40.00	3.25
34" SPaper. LB.	C2X2	NA	52.00	3.25

[1] C112 is the default.

[2] Trans. – Translucent Paper
PB. – Pressurized Ball point pens
LB. – Liquid Ball point pens
SPen. – Special customer-supplied pens
SPaper. – Special customer-supplied paper
NA – Not Applicable

[3] These rates are affected by the Service Factor (i.e., the Priority of the job that generates the plot). See explanatory notes in the above text.

APPENDIX C

Rates for the Laser (Xerographic) Printer

The default characteristics of output directed to the laser printer are; duplex; individual sheets of 8.5 x 11 inch paper without 3-holes punched in it; portrait orientation; TN modified character set; a 0.5 inch left margin, and; two-up paging (see the text below for a discussion of some of the above terms). Jobs which request special customer-supplied paper forms or paper forms other than paper forms codes **N**, **Y** or **B** (see the Table below) are charged a forms mount charge of $2.00/job.

In the discussion that follows, a virtual page is the material printed on a single page -- in the old line printer sense. The job page count is the **greater** of; the number of lines in the job divided by 60, or; the number of skip-to-top-of-form commands issued by the job.

When one virtual page is printed per laser printer page, this is referred to as one-up printing. Two virtual pages on a single page is called two-up printing. Simplex means single sided printing while duplex means double sided printing. Landscape orientation means the line is printed parallel to the longest edge of the paper. Portrait orientation has the printed line parallel to the shortest paper edge.

A four character code, IJKL, is used to specify the paper type (I), layout or orientation (J), character set (K), and left margin (L). A complete discussion on laser printer forms can be found in the UTCS GUIDE TO HIGHSPEED PRINTING. The specification of the I and J parameters affect the virtual page charge. The Table below gives the charge/virtual page of all the currently available combinations.

Customers who wish to use their own preprinted stock (such a letterhead paper or special forms) or who would like to take advantage of the laser printer's "forms flash" capability, should contact the supervisor of the Imaging/Humanities Support Group for rates.

Virtual Page Prices on the Laser Printer

Paper (I)[1]	Layout (J)[2]	$/virtual page	Mount charge per job
N	A,B	$0.050	$0.00
N	C	$0.025	$0.00
Y	A,B	$0.045	$0.00
Y	C	$0.023	$0.00
B	A,B	$0.045	$0.00
B	C	$0.023	$0.00
O	A,B	$0.050	$2.00
O	C	$0.025	$2.00
D	A,B	$0.045	$2.00
D	C	$0.023	$2.00
Q	A,B	$0.065	$0.00
Q	C	$0.033	$0.00
R	A,B	$0.053	$0.00
R	C	$0.026	$0.00

[1] N - no holes, simplex
Y - no holes, duplex (default paper)
B - no holes, duplex (default paper)
(0.25 inch binding margin added)
O - three holes, simplex
D - three holes, duplex
Q - no holes, simplex, high quality BELL-FAST bond
R - no holes, duplex, high quality BELL-FAST bond

[2] A - landscape, 1-up
B - portrait, 1-up
C - portrait, 2-up (default layout)

Recent Acquisitions in the Computer Library

Advances in computers, v.25. Orlando, Fla., Academic Press, 1986.

Association for Computing Machinery. *ACM guide to computing literature, 1985.* Baltimore, Md. ACM, 1986.

Bekic, H. *Programming languages and their definition; selected papers.* Ed. by C.B. Jones. Berlin, Springer-Verlag, 1983. 254 p.

Beth, Thomas, ed. *Cryptography.* Berlin, Springer-Verlag, 1983. 402 p.

Blaser, Albrecht and Zoeppritz, M. ed. *Enduser systems and their human factors.* Berlin Springer-Verlag, 1983. 138 p.

Computer Measurement Group. *International Conference. Proceedings.* CMG XIV(1983), CMG XV(1984).

Duijvestijn, Arie, J.W. and Lockemann, P.C., ed. *Trends in information processing systems.* Berlin, Springer-Verlag, 1981. 348 p.

Elsevier Science Pub. Co. *The software catalog: microcomputers Summer 1986.* New York, Elsevier, 1986. 2v.

Flynn, M.J. et al., ed. *Microcomputer system design: an advanced course.* Berlin, Springer-Verlag, 1982. 397 p.

Gibbons, Alan M. *Agorithmic graph theory.* Cambridge, University Press, 1985. 259 p.

Hill, Edward, Jr. *A comparative study of very large data bases.* Berlin, Springer-Verlag, 1978. 140 p.

Horspool, R. Nigel. *C programming in the Berkeley UNIX environment.* Scarborough, Prentice-Hall Canada, 1986. 303 p.

Hutchison, David, et al., ed. *Local area networks: an advanced course.* Berlin, Springer-Verlag, 1985. 497 p.

International Conference on Software Engineering, 8th, London, Aug. 1985. *Proceedings.* Washington, IEEE Computer Society Press, 1985.

Mical, Robert J. and Deyl S., *Amiga Intuition reference manual.* Reading, Mass., Addison-Wesley, 1986. 358 p.

Mortenson, Michael E. *Geometric modeling.* New York, Wiley, 1985. 763 p.

Nivat, Maurice and Reynolds J.C., ed. *Algebraic methods in semantics.* Cambridge, Mass., University Press, 1985. 634 p.

Osterby, Ole and Zlatev Z. *Direct methods for sparse matrices.* Berlin, Springer-Verlag, 1983. 127 p.

Palmer, Edgar M. *Graphical evolution.* New York, Wiley, 1985. 177 p.

Pan, Victor. *How to multiply matrices faster.* Berlin, Springer-Verlag, 1984. 212 p.

Peck, Rob. *Amiga ROM kernel reference manual: libraries and devices.* Reading, Mass., Addison-Wesley, 1986. 1031 p.

Polack, Wolfgang. *Compiler specification and verification.* Berlin, Springer-Verlag, 1981. 269 p.

Rose Caroline. *Inside Macintosh.* Reading, Mass., Addison-Wesley, 1985. 3v.

Saito, N. and Nishizeki, T. *Graph theory and algorithms.* Berlin, Springer-Verlag, 1981. 215 p.

Sanderson, John G. *A relational theory of computing.* Berlin, Springer-Verlag, 1980. 147 p.

continued...

Computer Library continued

Sassenrath, Carl et al. *Amiga ROM kernel reference manual: Exec.*, Reading, Mass., Addison-Wesley, 1986. 265 p.

Shore, John. *The Sachertore algorithm and other antidotes to computer anxiety.* New York, Viking Penguin, 1985. 269 p.

Strawn, John, ed. *Digital audio engineering: an anthology.* Los Altos, Cal., William Kaufmann, 1985. 144 p.

Strawn, John, ed. *Digital audio signal processing: an anthology.* Los Altos, Cal., W. Kaufmann, 1985. 283 p.

Sullivan, David R. *Using computers today, with applications for the IBM PC.* Boston, Houghton Miffin, 1986. 655 p.

U.S.A. - Japan Conference on Human-Computer Interaction, 1st, Honolulu, Aug. 1984. *Human-computer interaction.* Ed. by G. Salvendy. Amsterdam, Elsevier, 1984. 470 p.

van der Veer, Gerrit C., et al., ed. *Readings on cognitive ergonomics - mind and computers.* Berlin, Springer-Verlag, 1984. 269 p.

Stephanie Johnston

Technical Reports Received in the Computer Library

University of California. Los Angeles.

Chow, Kam Pui. *Relaxation problem solving (with input to Chinese input problem).* 146 p. CSD-860058.

Lecot, Koenraad G. *Inexact reasoning in Prolog-based expert systems.* 174 p. CSD-86053.

Ledoux, Carol Helfgott. *A knowledge-based system for debugging concurrent software.* 184 p. CSD-860060.

Pearl, Judea. *On the logic of probabilistic dependencies.* 11 p. CSD-860062.

Digital Systems Research Center.

Chazelle, Bernard and Guibas, Leonidas J. *Fractional cascading.* 58 p. #12.

University of Illinois.

Adams, Richard Arthur. *Distributed deadlock detection for communicating processes.* 217 p. #128.

O'Hagan Eich, Brendan. *An object oriented graphics library.* 87 p. #1273.

Leimkuhler, B.J. *Error estimates for differential-algebraic equations.* 56 p. #1287.

Chen, Arthur Yao-Chun. *A UNIX 4.2bsd implementation for process suspension and resumption.* 111 p. #1286.

Rutgers University.

Allender, E.W. *The complexity of sparse sets in P.* 14 p. DCS-TR-184.

Hoang, C.T. *Alternating orientation and alternating colouration of perfect graphs.* 13 p. DCS-TR-189.

Imielinski, T. *Query processing in deductive databases with incomplete information.* 27 p. DCS-TR-177.

Ryder, B.G. and Paull, M.C. *Elimination algorithms for data flow analysis.* 71 p. DCS-TR-140.

Stanford University

Foulser, David E. *On random strings and sequence comparisons.* 120 p. #1101.

continued...

Computer Library continued

Fu, Li-Min. *Learning object-level and meta-level knowledge in expert systems.* 220 p. #1091.

Knuth, Donald E. *Texware.* 352 p. #1097.

Malik, Jitendra. *Interpreting line drawings of curved objects.* 118 p. #1099.

Wang Institute

Lomet, David B. *Partial expansions for file organizations with an index.* 25 p. TR-86-06.

Perlman, Gary. *Multilingual programming: coordinating programs, user interfaces, on-line help and documentation.* 28 p. TR-86-05.

Weiss, David M. *Teaching a software design methodology.* 34 p. TR-86-04.

Stephanie Johnston

Documents at UTCS

All vendor-produced documentation may be ordered through the UTCS Information Office, Room 206, Engineering Annex. UTCS documents and selected vendor documents are also stocked there for purchase. Whenever feasible, documents are made available online, and users are encouraged to print their own copies. On the MVS and VM machines, special commands have been provided for this purpose.

To print online documents on:

IBM MVS	**IBM VM/CMS**	**GP UNIX**
WYLBUR users type "do document?"	type "help document"	use *ipr* command
TSO users type "help document"		
APL users type ")LOAD 1 UTCSGUIDE<RETURN>HELP"		

See examples at the end of next page.

UTCS Documents in hardcopy

New:
UTCS Guide to Micro File Transfer Service

Previously announced:
Academic's Guide to Microcomputer Systems
Character Sets for Highspeed Printing
UTCS GUIDE TO PRODUCTS AND SERVICES: Introduction
UTCS GUIDE TO PRODUCTS AND SERVICES: Basics
UTCS GUIDE TO PRODUCTS AND SERVICES: Accounting
UTCS Catalogue: Access, Part 1
UTCS Catalogue: Access, Part 2
UTCS Catalogue: IBM MVS Utilities
UTCS Catalogue: Numerical Products
UTCS Catalogue: Statistics Products
UTCS Catalogue: Text Products
UTCS Guide to Census Tapes
UTCS Guide to Tape Usage on VM/CMS
UTCS Guide to Kermit
UTCS Guide to Text Processing on GP UNIX

UTCS Documents online	**MVS MANUAL**	**CMS LISTING**	**GP UNIX**	**Forms Code**
New:				
UTCS Guide to Micro File Transfer Service	MICROXFR	MICROXFR		*
Previously announced:				
UTCS GUIDE TO PRODUCTS AND SERVICES: Introduction	INTRO		/usr/doc/utcs/intro	*
UTCS GUIDE TO PRODUCTS AND SERVICES: Basics	BASICS	BASICS	/usr/doc/utcs/basics	*
UTCS Catalogue: Access, Part 1	ACCESS1		/usr/doc/utcs/access1	*
UTCS Catalogue: Access, Part 2	ACCESS2		/usr/doc/utcs/access2	*
UTCS Catalogue: IBM MVS Utilities	MVSUTIL	MVSUTIL		*
Product-Function List	UTILLIST	UTILLIST		BXQD
UTCS Catalogue: Numerical Products	NUMCAT	NUMCAT		*
Product-Function List	NUMLIST	NUMLIST		BXQD
UTCS Catalogue: Statistics Products	STATCAT	STATCAT		*
Product-Function List	STATLIST	STATLIST		BXQD
UTCS Catalogue: Text Products	TEXTCAT	TEXTCAT	/usr/doc/utcs/textcat	*
UTCS Guide to APL	APLGD			*
UTCS Guide to APLXFR	APLXFR			*
UTCS Guide to BMDP	BMDP	BMDP		*
UTCS Guide to Census Tapes	CENSUS	CENSUS	/usr/doc/utcs/census	*
UTCS Guide to GP UNIX			/usr/doc/utcs/gpunix	*
UTCS Guide to GPJS	GPJSX	GPJSX	/usr/doc/utcs/gpjs	*
UTCS Guide to Highspeed Printing	PRINT	PRINT	/usr/doc/utcs/print	*
UTCS Guide to IBM MVS Online Storage	IBMDISK	IBMDISK		*
UTCS Guide to Kermit	KERMIT	KERMIT	/usr/doc/utcs/kermit	*
UTCS Guide to Micro Laser Printing	MICRLASR	MICRLASR		*
UTCS Guide to SAS	SAS	SAS		*
UTCS Guide to SCRIBE		SCRIBE	/usr/doc/utcs/scribeguide	*
(For printing instructions, see page 1 of document)				

* *Recommended forms code for the 8700 is YXLE unless otherwise stated.*
‡ *Use the 87SET command. Type "help 87set".*

Documents at UTCS continued

UTCS Documents online	MVS MANUAL	CMS LISTING	GP UNIX	Forms Code
UTCS Guide to Series/I Terminal Use	SERIES	SERIES		*
3270 Emulation:				
Cybernex APL100 and Volker Craig VC404	CYBER	CYBER		*
DM1520	DM1520	DM1520		*
Hardcopy Terminal	HARDCOPY	HARDCOPY		*
IBM 3101	IBM3101	IBM3101		*
IBM PC Kermit	PCKERMIT	PCKERMIT		*
SOROC IQ	SOROC	SOROC		*
VT52	VT52	VT52		*
VT100	VT100	VT100		*
UTCS Guide to SPSS	SPSS	SPSS		*
UTCS Guide to SUBUTILS	SUBUTILS	SUBUTILS		*
UTCS Guide to Tape Usage on VM/CMS		CMSTAPE		*
UTCS Guide to Text Processing on GP UNIX			/usr/doc/utcs/text	*
UTCS Guide to TFW.MAK in SCRIBE		TFWMAK	/usr/doc/utcs/tfwguide	*
UTCS Guide to TSO	TSOGD			*
UTCS Guide to UTDSUTIL	UTDSUTIL	UTDSUTIL		*
UTCS Guide to VM/CMS	CMSGD	CMSGD		*
UTCS Guide to WYLBUR	WYLINTRO			*
UTCS Rate Schedule (Commercial)		RATESCOM		‡
UTCS Rate Schedule (External)		RATESEXT		‡
UTCS Rate Schedule (Internal)		RATESINT		‡
UTCS WYLBUR Tutorial	WYLTUTOR			*
Other Documentation online:				
Kermit				
Kermit Protocol Manual	KERMITPM	KERMITPM		YXOE
Kermit User Guide	KERMITUG	KERMITUG		YXOF
VM Tape Documents				
TapeMap User's Guide and Reference		TAPEMAP		*
VMTAPE Messages and Codes		VMTMSGS		YXOE
VMTAPE User's Guide		VMTUSER		YXOE
VMSECURE				
VMSECURE User's Guide		VMSECURE		YXOE
Waterloo SCRIPT				
Reference Manual	WSCRPTRF	WSCRPTRF		YXLC
User's Guide	WSCRPTUG	WSCRPTUG		YXLC
GML USER'S Guide	GMLUG	GMLUG		YXLC
OBS WYLBUR				
Messages and Codes	WYLMSGS			YXLD
Qwik Files	WYLQWIK			YXLD
Reference Summary	WYLREFCD			YXLG
Reference Manual	WYLREFMN			YXLD
7.0 Release Guide	WYLREL70			YXLC
User Guide	WYLUSER			YXLD

In these examples, the document to be printed is the UTCS Guide to Census Tapes (MANUAL/LISTING=CENSUS). <RETURN> means RETURN or ENTER key.

TSO:	document census forms(yxle) <RETURN>
WYLBUR:	do document <RETURN> and respond to the prompts.
CMS:	document <RETURN> <RETURN> laser census listing (forms yxle <RETURN>
GP UNIX:	nohup ipr -8p -fyxle /usr/doc/utcs/census & <RETURN>

* *Recommended forms code for the 8700 is YXLE unless otherwise stated.*
‡ *Use the 87set command. Type "help 87set".*

Consulting and Enquiries

Applications Support & Advising Supervisor	Alex Nishri	KC308	978-7109
External Marketing Consultant	Ihor Prociuk	KC308	978-6875
Erindale College	Joe Lim	ER2035	828-5311
Scarborough College	William Barek	SC626	284-3173
Information Office	Dale Wright	EA206	978-4990
Account & Access Code Enquiries (U of T)	Agatha Stevens	MP337	978-8703
Account & Access Code Enquiries (External)	Sylvia May	MP337	978-7148
IBM PC Maintenance	Kam Mark	SF4306	978-5050
Tape Library (Academic Services)	Rosa Ciddio	MP368	978-7319
Tape Library (Administrative Services)	Miranda Fong	MP368	978-6693
Terminal Rentals	Louise Gauld	SF4306	978-3787
U of T Computer Library	Stephanie Johnston	EA206	978-2987
UTCS Noncredit Short Courses	Irene Rosiecki	EA207	978-4565

Consulting & Advising Services	
Phone:	978-HELP
CMS, TSO and GP UNIX userids:	ADVISOR
CMS Userid for mail problems:	POSTMSTR
Microcomputer Advising(MSG)	978-8701
Numerical/Statistical Advising(SNAC)	978-STAT
System Status Enquiries (GP UNIX)	978-4318
System Status Enquiries (IBM)	978-7393

300 Baud Interactive Services	978-6200
1200 Baud Interactive Services	978-3959
Datapac	4320 0056
Telnet	0302043200056
Tymnet	<backspace> DPAC;302043200056

UTCS Directory

Director	Dr. Warren Jackson	MP350	978-8948	WCJ at UTORONTO *
Associate Director	Eugene Siciunas	MP350	978-5058	EUGENE at UTORONTO *
Managers:				
Communications & Technical Support	Norman Housley	SF4306	978-4967	NORMAN at UTORONTO *
Internal Systems & Administration	Ron Vander Kraats	MP350	978-4428	RVK at UTORONTO *
Operations	Dr. Bob Chambers	MP350	978-7092	
Systems	Bill Lauriston	MP331	978-3579	BILL at UTORONTO *
User Interface	Don Gibson	KC308	978-7331	DON at UTORONTO *

Committees on Computing

Committee on Administrative Computing	Chair	Janice Oliver	978-4322	
UTCS Board	Chairman	Prof. D.M. Nowlan	978-4984	NOWLAN at UTORONTO *
Supercomputer Users' Group at U of T	Chairman	Prof. P.P. Kronberg	978-4971	

ER = Erindale
KC = Koffler Centre
SF = Sandford Fleming
SC = Scarborough
MP = McLennan Physical Labs

* NetNorth/BITNET/EARN

UTCS Terminal and Advising Sites

Names and Locations

- **Central Advising Office (CAO), 978-HELP**
- **Education Facility (Educ),** Koffler Centre, 214 College St., Room 308.
- **Engineering Annex (EA, CDF),**11 King's College Road, Rooms 103, 107, 107B, 201, 203.
- **Erindale College (Erin), 828-5339,** Mississauga Road, Erindale Campus, Rooms 2005, 2039, 2045
- **Robarts,** Robarts Library, 130 St. George St., Room 1061A
- **Scarborough College (Scar), 284-3122,** Military Trail, Scarborough Campus, Rooms S624, S625, S627, S628, S628A
- **Sidney Smith (Sidney),** 100 St. George St., Rooms 1071, 1073, 2105
- **St.Michael's College,** 121 St. Joseph St., Room 107
- **Trinity College,** 6 Hoskins Ave., Room 024
- **Victoria University,** 73 Queens Park Cres.

Sites	Hours of Access				Restrictions*	Advising
	Mon-Thurs	Fri	Sat	Sun		
CAO	10:00-18:00	10:00-18:00	closed	closed	Research	978-HELP
CDF	24 hrs	24 hrs	24 hrs	24 hrs	Undergrads	No
EA	24 hrs	24 hrs	24 hrs	24 hrs	None	978-HELP for Research
Educ	9:00-18:00	9:00-18:00	closed	closed	Research**	978-HELP
Erin (2039)☐	9:00-17:00	9:00-17:00	12:00-16:00	12:00-16:00	Research	Rm 2005
(2045)	24 hrs	24 hrs	24 hrs	24 hrs	Undergrads	Rm 2005
(235†)	8:00-22:00	8:00-17:00	closed	closed	None	Rm 2046
Robarts	8:30-24:00	8:30-24:00	9:00-17:00	13:00-22:00	None	978-HELP for Research
Scar	24hrs°	24hrs°	24hrs°	24hrs°	Research Undergrads	Rm S626 Rm S626-A
Sidney	7:00-24:00	7:00-24:00	7:00-24:00	7:00-24:00	None	978-HELP for Research
St.Michael's	24 hrs	24 hrs	24 hrs	24 hrs	None	Arranged by College
Trinity	8:00-22:00	8:00-22:00	8:00-22:00	8:00-22:00	None	Arranged by College
Victoria	8:30-23:00	8:30-23:00	closed	closed	None	Arranged by College

* Research includes graduates, faculty, staff. ** May be unavailable due to UTCS courses. ☐ key access available.
° printers available some of the time. † access restricted to building hours.

Advising Hours

CAO	Monday through Friday, 10:00 - 18:00
Scarborough	**Monday through Friday, 09:00 - 16:30, Wednesday and Friday 18:00 - 24:00, Saturday 10:00-17:00**
Erin	Monday through Friday 09:00 - 22:00, Saturday & Sunday 12:00-16:00

Sites	PACX	Network Terminal Server	CMS Terminals	Printers	DCS/Micros
CDF	Y	N	N	Y	N
EA	N	Y	Y	Y	N
Educ	Y	N	N	N	N
Erin	Y	Y	N	Y	N
Robarts	Y	N	Y	Y	Y
Scar	Y	Y	N	Y	N
Sidney	N	Y	Y	Y	Y
St.Michael's	Y	N	N	Y	Y
Trinity	N	N	N	Y	Y
Victoria	Y	N	N	Y	Y

(Y=yes, N=no)

UTCS Services

The principle mandate of UTCS is to plan, implement, and operate computer facilities and "common-carrier" networks, and to plan and support divisional, departmental or project computer facilities as requested.

UTCS Centrally Owned and Managed

Systems

IBM MVS

- TS0, WYLBUR, APL, Batch
- 4381-R03 processor, 32 megabytes of memory
- MVS operating system

IBM VM/CMS

- General Purpose Timesharing; access to NetNorth, BITNET, and EARN networks
- 4381-P02 processor, 16 megabytes of memory
- CP operating system, VM/SP HPO R3.4
  CMS timesharing system, VM/SP Release 3
  RSCS spooling system, Release 3

GP UNIX
Technical Assistance: 978-8853

- General Purpose Timesharing under a commercial 4.2BSD UNIX license
- VAX-11/750, 5 megabytes of memory
- high-quality phototypesetting
- offers a sophisticated and powerful environment for text processing
- offers a sophisticated programming environment suitable for commercial software development or testing
- full access to USENET, an electronic technical information exchange facility
- offers excellent electronic mail facilities and ability to send or receive mail from most computer networks world wide, such as UUCPNET, ARPANET, NetNorth, BITNET, CSNET, CONNET

Services

Communications & Technical Support
Primary Phones: 978-3787, 978-4967

- Communications Group provides communications systems, terminals, modems, data channels: consulting and installation.
- Field Service Group installs and maintains communications and computer systems, particularly IBM PCs and Micro Vaxes, on a contract basis or on a cost-per-call basis.
- provides consulting on computer systems technology and installs computer systems
- provides access between the IBM systems and machines using UNIX, VMS and other operating systems. Ethernet and Pronet technologies are used over various transmission media including optical fibre. More basic communications techniques are also used for moderate speed links.
- provides access to NetNorth (BITNET), the North American Universities Network; and USENET, the UNIX networking fraternity
- will provide a communications solution to department needs on a contractual basis.

User Interface Group
Primary Phone: 978-HELP

- provides advising, consulting and documentation on:
  - command languages
    including CMS, TS0, WYLBUR, JCL and UNIX
  - high level languages
    including FORTRAN, APL and PL/I
  - packages and libraries
    including SAS, SPSS-X, BMDP, IMSL and NAg
  - editors and formatters
    including XEDIT, TS0, WYLBUR, ed, SCRIBE, nroff/troff
- installs and maintains application packages
- provides courses on the more popular services
- provides general micro support
  - selection consulting for hardware and software
  - Micro Lab for evaluation of hardware and software
  - advice on University discounts
  - media conversion and data transfer
  - operates UTCS Microcomputer Bulletin Board System
  - offers Micro Laser Printing Service
  - offers 35mm slide production service using Polaroid Palette

Facilities Managed by UTCS

Administrative Computing

- administrative IMS/VS, DB/DC, DB2, Batch and TS0
- 4381-R03 processor, 32 megabytes of memory
- MVS operating system

UNIX SAS (Statistical Analysis Services)

- UNIX Statistical Analysis Service (Dept. of Statistics only)
- PDP-11/70, 4 megabytes of memory
- UNIX Seventh Edition

Computer Disciplines Facility/VAX

VAX-11/780, 4 megabytes of memory
VAX-11/750, 4 megabytes of memory
VAX-11/750, 4 megabytes of memory

- Computer Science interactive access
- UNIX (Berkeley UNIX 4.2BSD)

Computer Disciplines Facility/PC

- 97 TI Professional Computers connected in a Local Area Network
- introductory Computer Science instruction
- MS-DOS with Turing environment

Cray Research Inc. X-MP/22

- 2 processors, 2 megawords main memory
- solid state disk (SSD) with 16 megawords of storage
- COS 1.15 operating system
- VAX-11/750 + microVAX II providing VMS front end services
- UTCS 4381-P02 providing VM front end services

Scarborough College Systems

VAX-11/750, 5 megabytes of memory
VAX-11/750, 5 megabytes of memory

- instructional access using UNIX (Berkeley UNIX 4.2BSD)

Erindale College Systems

VAX 8200, 8 megabytes of memory

- instructional access using VMS
- research access

VAX-11/750, 5 megabytes of memory

- instructional access using UNIX (Berkeley UNIX 4.2BSD)

Institutional Relations System

VAX-11/750, 8 megabytes of memory

- database services to the owner departments using VMS

EPAS Facility

- 4361-5 processor, 12 megabytes of memory
- general VM/CMS services to the owner departments

Software List

Each programming language or package available at UTCS has a support level. In general, Class A Products receive full support, Class B limited support (as time and resources allow), Class C no active support. For complete details of UTCS product support policy, see the UTCS GUIDE TO PRODUCTS AND SERVICES:Introduction.

MVS SOFTWARE

MVS Package/ Compiler	**Support Level**	**Version**
Graphics Packages		
PLOTBASIC (FORTRAN)	A	
PLOTBASIC EXTENDED ROUTINES	A	
SAS/GRAPH	A	82.4; 5.08
SURFACE II	C	
ISPF/PDF	A	1
WYLBUR	A	7.0
Languages		
APL (Sharp)	A	May 83
ALGOLW (Stanford)	C	n/a
ASSEMBLER(F)	C	2.1
A.A.E.C. PASCAL	C	2.0
FORTRAN H EXT.	B	2.2.1
LISP	C	
MARKEXAM	C	
PL/C	C	
PL/I CHECKOUT COMPILER	B	1.3.0
PL/I OPT COMPILER	B	1.4.0; 1.5.0
SNOBOL 4	C	3.5
SPITBOL	C	
UTCS FORTRAN UTILITIES	B	
VS COBOL	C	2.4
VS FORTRAN	A	1.4.1
WATBOL	C	V3L2
WATFIV	B	
WPASCAL	C	(U of Waterloo/ West Valley Joint Community College Version)
Numerical Packages		
DYNAMO	B	4.07
EISPACK	C	4
FORMAC	C	
FUNPACK	C	
GPSS	A	Rel.1, Mod. Level 4
IMSL	A	9.2
LINPACK	C	
MINOS	C	4.0
MINPACK	C	1
MPSX	C	Rel. 1, Mod. Level 6
NAg	A	Mark 11
Statistical Packages		
BMD	C	
BMDP	A	Level 85
GENSTAT	C	4.04B
IMSL	A	9.2
NAg	A	Mark 11
NTSYS	C	Dec. 1982
SAS	A	82.4; 5.08; 5.15
SPSS	C	9.1
SPSSX	A	2.1
TSP	C	3.5
Text-Processing Packages		
COGS(Concordance Generating System)	B	3.1
KWIC	C	
OCP (Oxford Concordance Program)	C	1.4
Waterloo SCRIPT	B	85.1
Utilities		
DSMAP	A	
FILEBOL	C	
GRIPE	A	
IBM UTILITIES		
IEBGENER	A	
IEBCOPY	A	
IEHMOVE	A	
DFSORT	A	6.0
TAPEPRT	A	
TAPEXRAY	A	
TCOPY	A	
UTCS FORTRAN UTILITIES	B	

VM/CMS SOFTWARE

VM/CMS Package/ Compiler	**Support Level**	**Version**
Communications Packages		
FTS	A	
Kermit	A	
MICROLASER	A	
Graphics Packages		
SAS/GRAPH	A	82.3; 5.08
PLOTBASIC(FORTRAN)	C	
Languages		
ASSEMBLER(F)	C	
Concurrent Euclid	C	1.9
FORTUTILS	A	2.0
PL/I CHECKOUT COMPILER	B	1.3.0
PL/I OPT COMPILER	B	1.4.0; 1.5.1
REXX	A	
SNOBOL 4	C	3.5
TESTFORT	A	2.2
Turing	C	
VS FORTRAN	A	1.4.1
VS PASCAL	C	2.1; 2.2
Waterloo C	C	1.2
WATFIV	C	V2L0
WATFOR-77	A	1.3
Numerical Packages		
IMSL	A	9.2
Statistical Packages		
BMDP	A	Level 83
IMSL	A	9.2
Minitab	B	82.1; 5.1
SAS	A	82.3; 5.08
SPSSX	A	2.1
Text-Processing Packages		
SCRIBE	A	4(1400)-1
Waterloo SCRIPT	B	85.1
XEDIT	A	
8700 Pseudotypesetting	A	n/a
MICROLASER	A	
Utilities		
FORTUTILS	A	2.2
TESTFORT	A	2.2
TPRINT	C	

Software List continued

UNIX SOFTWARE

UNIX Package/ Compiler	Support Level	Version
Communications Packages		
kermit	B	4C(058)
macget/macput	C	
xmodem	C	
ftp, rsh, rlogin, telnet, rcp (Access via TCP/IP to most of the networked machines on all three campuses)	B	
rn/Pnews	B	
mail, mh, Mail		
rje	B	
Languages		
CC	B	Release E
cc	A	BSD std.
f77	C	BSD std.
efl	C	BSD std.
ratfor	C	BSD std.
ttc	C	
iconc	C	V5
liszt	C	8.36 Opus 79
pc	C	BSD std.
yacc	C	
awk	C	
adb,dbx	C	BSD std.
Text Processing Facilities		
ed	A	
vi	C	
jove	C	
spell	C	
diction/explain	C	
eqn	A	
tbl	A	
pic	C	
troff	A	
nroff	A	
scribe	A	4(1400)-1
Utilities		
crypt	A	BSD std.
compress	C	BSD std.
csh	B	BSD std.
diff	A	BSD std.
grep	A	BSD std.
ipr	B	
learn	C	BSD std.
patch	C	
sed	A	BSD std.
sort	A	BSD std.
sh	A	BSD std.
tar	A	BSD std.
uniq	A	BSD std.

MICROCOMPUTER SOFTWARE

The following are microcomputer software packages for which UTCS can provide either support or some information. As with mainframe products, micro packages receive full support (Class A), limited support (Class B), or no active support (Class C). The specific criteria differ from those for mainframe classes and are outlined in the Academic's Guide to Microcomputer Systems.

Package/ Compiler	Support Level	Version
Communications Packages		
Kermit (MS-DOS)	A	2.27d
Kermit (APPLE II)	A	
Kermit (CP/M)	C	
Kermit Macintosh	B	
PC TALK3	B	
PC PLOT III	A	
ProComm	B	
MacTerminal	C	
WYLBUR/PC	C	
Database Managers		
AskSam	C	2.2
Clipper	B	
DATAEASE	B	
dBASE II (CP/M)	B	
dBASE II (MS-DOS)	C	
dBASE III	A	1.1
dBIIICompiler	B	1.1
FoxBASE	C	2.14u
Notebook II	B	2.03
REFLEX	B	
ViewFinder III	B	
ZyINDEX	B	
Graphics Packages		
DR HALO	C	
Microsoft CHART (Macintosh)	C	
MacPaint	B	
Languages		
BASIC	A	
Microsoft FORTRAN	C	
TURBO Pascal	B	
WATFOR-77	A	
Operating Systems, Utilities		
APPLE Turnover	A	
CP/M	B	
FASTBACK	B	
PC-DOS	A	
Sidekick	B	
SuperKey	C	
TURBO Lighting	C	
XenoDisk	A	1.41
Spreadsheet Packages		
APPLEWORKS	C	
Lotus 1-2-3	B	
Multiplan (Macintosh)	C	
Statistical Packages		
MINITAB	C	
SAS/PC	A	6.01
SPSS/PC +	A	
Word-Processing Packages		
Gutenberg Senior	C	
FinalWord II	A	2.0
MacWrite	C	
Microsoft Word	B	2.0
Nota Bene	B	
T^3	B	
Volkswriter Scientific	C	
WordPerfect	A	4.1
WordStar	B	

UTCS COMPUTERNEWS Subscription Request Form

If you wish to have your name and/or address added, changed or deleted from our *COMPUTERNEWS* mailing list, please complete this form.

Please ☐ add

☐ change

☐ delete my name and address.

NAME, ADDRESS and TELEPHONE, in full	PREVIOUS NAME and ADDRESS, in full (or include your old mailing label)
---	---
---	---
---	---
---	---
---	---

Check here if you can receive *COMPUTERNEWS* by campus mail. ☐

Comments on this issue of *COMPUTERNEWS.*

-------------------- FOLD HERE --------------------

Return to:

COMPUTERNEWS
University of Toronto Computing Services
McLennan Physical Laboratories
Room 350
Toronto, Ontario
M5S 1A1

UNIVERSITY OF TORONTO
COMPUTING SERVICES
TORONTO, CANADA
M5S 1A1